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Because of the breadth and depth of objectives sought for the elementary school child, there is a lack of knowledge of specific effects of teaching methods and of the values attached to one or another outcome of the total educational process. Four general objectives were set and reported upon at length. First, instruments were developed and found to be adequately reliable in measuring six significant outcomes of elementary education in children's attitudes, performances and behaviors. The outcomes measured include (1) self-concepts, (2) liking for other children, (3) task-oriented classroom behavior, (4) achievement test scores, (5) attitudes toward school activity and (6) creativity test scores. Second, measurement techniques were developed for assessing various classroom conditions which are presumed to affect children's motivation and their work output toward the goals described. These conditions include the attitudes of teachers and peers. Third, the inter-relationships of the outcomes and the classroom conditions were studied; children were tested at the beginning and at the end of the school year. Last, a prediction of outcomes was attempted based both on the children's talents and attitudes and on the attitudes and behavior of peers and teachers. Some results of this study included the relationship between creativity and self-concept, and the strong influence of the opinions of teachers and peers on the learning of the less able children. All tests, results and intercorrelations of the study are presented in detail.

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THE EFFECT OF CLASSROOM CONDITIONS
ON THE STRENGTH OF ACHIEVEMENT MOTIVE AND WORK OUTPUT ON ELEMENTARY SCHOOL CHILDREN

Cooperative Research Project No. OE 873

Pauline Sneddon Sears

Stanford University
Stanford, California

1963

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The effect of classroom conditions on the strength of achievement motive and work output of elementary school children.

by Pauline S. Sears, Principal Investigator

CHAPTER I. INTRODUCTION

Efforts to strengthen and toughen the elementary school curriculum have run into two major problems. These are first, the lacks in our knowledge with reference to specific effects of teaching method, and secondly, the values attached to one or another outcome of the total educational process. Both problems stem from the breadth and depth of objectives sought for the elementary school child, and also from the strong and sometimes prejudiced values held with reference to which outcomes are to be stressed as of primary importance.

Types of educational outcomes may be roughly grouped in three categories:

1. Learning of traditional academic subject matter.
2. Learning of attitudes: toward self and others, toward knowledge, aesthetics.
3. Learning of skills which facilitate further learning: inquiry, reflective thinking, originality, flexibility and the like.

Knowledge of methods which will achieve these outcomes is particularly scanty with respect to the last two groups, although recently there has been some work on inquiry (Suchman, 1962), data processing (Hunt, 1963), creativity (Getzels and Jackson, 1962; Torrance, 1962), and discovery (Bruner, 1960). Each chapter author for the comprehensive Handbook of Research on Teaching (Gage, 1963) calls for more definitive investigation of specific results of teaching methods. Stern sums up the problem well:

> "It is inevitable, however, that ideology should pass for theory in the absence of empirical facts. Basic to many of the issues in American education today is a concern with fundamental purposes: their definition and the means by which they may be achieved." (Stern, 1963, p.434.)

The second problem involves the choice of most important outcomes, or the emphasis to be given to one or another. Here, it sometimes seems, we are still battling along the progressive-traditional lines. Because there is so little sound research of specific effects on children, many people are inclined to take an either/or position. One group presses for academic excellence; for them, other outcomes are of lesser weight. Another fears that lack of attention to social learnings will result in children who are unable to make good adjustments in the personal social areas. Another feels that premature assimilation of great numbers of facts will react badly on the child's ability to create new ideas. No one has accurate information as to whether the single-minded pursuit of one objective is, in fact, detrimental to the achievement of others. Such research as does exist on teaching methods has ordinarily considered a single criterion of learning, most frequently achievement test scores. If there should prove to be an appreciable negative relation, for example, between the development of academic excellence and the development of self-esteem in children who are less gifted for academic achievement, then those planning the instructional strategies should be aware of this fact.

What is needed is examination of the interrelationships between various of the most desired outcomes of elementary education. The present study does this for six types of outcomes, and also examines the classroom conditions, or situational variables, associated with achievement of each of the six over a year's time. The theoretical considerations leading to selection of the variables to be measured are given in the next chapter. To understand these theoretical points, one must have in mind the general structure of the research project that was designed to provide some of the kinds of information called for in the comments above.

Ten self-contained elementary classrooms were used for intensive study. Seven of these, with a total of 195 children, were of 5th or 6th grade level; three were of first or second grade level. Complete sets of scores were obtained from 70 children in these primary classrooms.

Since one major aim of the study has been to discover what aspects of classroom conditions influence the motivation and ultimate performance of children, and since we know well that some of these motivational characteristics are determined by home or other out of school experiences, it was necessary to design the present study in such a way as to get "before and after" measures of the classroom influence. For this reason measures of teacher and child behavior have been taken in fall and spring. It has thus become possible to isolate, in some degree, the effects of specific teacher behavior by examination of relationships obtained at the beginning of the association between teacher and child (fall) and again after a school year together (spring).

The main data analysis has been done on the seven upper grade classrooms, while the results from the three primary classrooms will be used for comparative purposes.

CHAPTER II. THEORETICAL CONSIDERATIONS

Choice of Educational Outcomes

The design of the research required multiple criteria, or outcomes, to be used as target variables. Since it did not seem feasible to utilize a great number, some choices had to be made. Following is some of the thinking involved in the process of selection.

Recent reviews of research on teaching (Withall and Lewis, 1963; Metcalf, 1963; Bloom, 1963) have pointed out the difficulties stemming from uncritical acceptance of glittering objectives of education. Withall and Lewis, for example, say:

> "The problems indicated here may stem, in part, from the harnessing of educational activity to predetermined educational objectives used to guide classroom instruction at all levels and from the ambiguity with which such objectives must be surrounded in order to be applicable to millions of children of varying ages and abilities." (p. 709)

In addition, objectives are frequently not stated in operational terms, and indeed may be of such a character that it is impossible to derive evaluation procedures from them. A further consideration is that while outcomes are usually conceived by adults, presumably as a reflection of cultural goals, the children who are the learners have their own needs and purposes. It is probably correct to say that successful learning requires at least a modicum of cooperation from the learner, and that the child's own goals for learning will take priority over those which are set for him by others. This is particularly true if the child can see little personal satisfaction resulting from his work along the lines proposed by others.

The elementary school represents two important aspects of the child's life: first, it is his work--a serious business which provides opportunity for development of personal feelings of competence and self-esteem. Secondly, it represents an expansion of his world beyond the narrow confines of his family and home. The peer group of classmates, generally close to his own age, becomes an important agent of the socialization process. Relationships with other children are of considerable import to most children at this age. Whether or not the development of social skills is regarded as an overt responsibility of the school, the classroom and playground are social settings in which these learnings take place simply because of their group nature.

Needs of the culture must be met by the school as well as needs of individuals. In most children there appears to be no real conflict between the two; indicating perhaps that socialization is progressing smoothly. Mastery of subject matter is the traditional aim of the schools, and it probably is accepted as a personal goal by most middle class children. In addition, the feeling is widely held that cognitive skills of developing fresh and perhaps unique approaches to problems are a great need of our society. We know little about measurement of these skills, but there is no doubt as to their importance.

Finally, needs of the subculture represented by the school and teacher present objectives which in most cases press quite directly on children. Prominent among these are pressures for classroom behavior which at least simulates task-orientation and interest. The teacher is likely to be frustrated by children who appear uninterested, even if their production and achievement are good. Furthermore, the amount of school time spent by the child on task-oriented work is a behavioral index of his motivation: whether this be for achievement or for conformity to teacher wishes.

In summary, the choice of criteria to be used as educational outcomes of the year's classroom experience was based on the following considerations:

1. Measures should be used which allow for the appearance of individual differences.

2. Measures should be operational, reasonably objective, reliable, and valid.

3. Some measures should be particularly relevant to children's personal-social goals.

4. Measures of feelings of competence and self-esteem should be included.

5. Subject matter mastery and measures purporting to get at creative thinking should appear in the list.

6. Classroom behavior, as well as production and attitudes, should be represented.

On these bases, six target variables were arrived at. These were as follows:*

---

*A set of summary tables, given at the end of the chapter, present all of the variables involved in the research design: (1) outcomes or consequents, (2) the resources of the child (initial status and antecedent variables), and (3) the situational variables, or modifying conditions as measured in the classroom over a year's time. The outcomes are called target variables and from a logical standpoint are the dependent variables. Resources of the child and situational determinants are predictor or independent variables.

1. Self-concept.
2. Attitudes toward peers; liking for other children.
3. Classroom behavior; task oriented work.
4. Achievement test scores.
5. Attitudes toward school activities.
6. Creativity.

While, as has been stated, consideration was given in the choice to the apparent social importance of the variable, the research does not take a position as to whether high scores on these measures are a good thing. Rather, the questions are: what kinds of classroom conditions are associated with these variables, and in what kinds of children.

Analysis of Classroom Conditions

As there are potentially hundreds of educational outcomes which might be examined for their antecedents, so there are a multitude of situational determinants, operating on the children in any classroom, which might be thought to influence outcomes of learning. Choices had to be made in this group of variables also.

The scheme for analysis of classroom conditions was made after a year or more of classroom observation by several trained observers, plus use of a comprehensive daily log dictated by two teachers over the year's period. The theoretical and practical considerations involved are reported in detail in an earlier publications (Sears, 1957; pp. 320-335, written chiefly by Richard Alpert, report the analysis of modifying conditions).

In evaluating change in learners, following or associated with certain classroom conditions, we are concerned on the learning level with: (1) stimuli which move the child toward action (instigating stimuli); and (2) stimuli which reinforce behavior (reinforcing stimuli). In terms of the individual learner, we are concerned with those environmental stimuli which: (1) satisfy his own personal needs and (2) suggest a higher expectancy for total satisfaction of the child's needs through a change in behavior than by maintaining the original behavior.

The specific motives which are appealed to by the instigating and reinforcing stimuli differ in hierarchical strength, depending on the child's history and the ways he has found effective in maintaining his own satisfactions. In any elementary classroom, the many types of motivation may be observed, some of which are listed below. Teachers and peers may be observed arousing these motives and also satisfying and frustrating the needs associated with them. Curriculum, classroom equipment, instructional materials, books also provide differential arousal, satisfaction and frustration.

a. Achieving a certain standard of excellence.
b. Gaining attention or status from peers.
c. Gaining attention or status from teacher.
d. Group loyalty-supporting the group or other peers.
e. Intrinsic interest or curiosity.
f. Working for tangible rewards and/or punishments.
g. Working to avoid anxiety.
h. Resistance or rebellion with regard to authority.
i. Competition.
j. Power.
k. Following rules, routine.
l. Pleasure, fun.
m. Friendly interaction.
n. Gaining acceptance.
o. Affiliation, withdrawal of love.
p. Self-worth, own judgment, self-esteem according to some personal internal standard.

Some of these motives have been measured (crudely, by TAT pictures and teacher ratings) in the present research and have been entered into the research design as resources or initial characteristics of the child entering the social situation of the classroom. The present concern is with the classroom conditions operating on children with different, or similar, hierarchies of motivational structure, as well as different talents and past experiences.

In our analysis of these classroom conditions we made an early decision to concentrate on the interpersonal, or social, transactions rather than on the content of what is taught. Thus we have not made a detailed analysis of type of curriculum, subject matter content, or teaching techniques with reference to specific content. Others are currently producing much interesting research along these lines (e.g., Wright and Proctor, 1961; Suchman, 1962). Eventually, of course, analysis of classroom conditions will have to take account of both the interpersonal and the content aspects of the learning situation, but for the current design this did not appear feasible. Cognitive transactions between teacher and pupils, as well as affective, were to be included, however.

The teacher and his influence on individual children.

The variables involving the teacher as a modifying influence on his class came from four different types of measurement: (1) Time sample observation of the teacher's classroom behavior, (2) teacher attitudes toward subject matter and types of school activities,

(3) teacher perceptions of each of the children in his classroom, and (4) teacher liking for each of the children or his personal enjoyment at having the child in class.*

Teacher classroom behavior. In self-contained classrooms, the teacher is the one adult in direct and constant interaction with children. From the teacher emanate many stimuli which reward or control children's behavior, evaluate it, start, stop and otherwise modify action. Teachers can require factually convergent ideas from the children, explore new possibilities, set the teacher as the main source of knowledge (lecture method) or require more active formulation of ideas by the children. These are a few examples of teacher behavior which show considerable variation among teachers and which appear to be possible influences on the learning of the children exposed to them.

The choice of aspects of teacher behavior to measure was made on the basis of hunches as to possibly fruitful relations to the various outcomes selected. The teacher behaviors are described in Chapter X. The chief sections of the category system are reward, control, teaching, and non-communicative. Within these sections the interaction is categorized according to source, direction, aspect, and technique.

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*Teachers were also interviewed in order to get at their philosophies of education, values, skills, joys and problems in teaching. These data have not been cast into quantitative terms, and are not included in the research design of the present project. The data are incorporated in profiles of two of the teachers presented in Sears and Sherman (1964).

Teacher attitude toward subject matter and classroom activities. As well as providing behavioral interaction with children which may modify learning, teachers hold their own attitudes and preferences for certain subject matters and types of activities. If these personal attitudes are harmonious with the attitudes of certain children, it would be expected that the educational process would for them proceed more smoothly; if teacher and children are widely separated, disharmony seems likely.

Furthermore, to the extent that the teacher serves as a role model to children, attitudes may be caught or taught from teacher to child. Occasionally, probably, the teacher absorbs some attitudes from the children. In any event, the degree of similarity in attitudes should provide a useful variable with reference to classroom conditions influencing learning.

Teacher perceptions of children. Teacher ratings of children have long been used, usually without honor to the teacher, as an index of children's intellectual and social development. Sullivan (1947); Stein, Stern and Bloom (1956); Lippitt and Gold (1959), among others, have performed a conceptual switch in thinking about the meaning of teacher perceptions of children. Rather now than attempting to assess teachers' accuracy with reference to some outside criterion--and thus in effect testing "validity" of teacher perception--the rating or opinion of the teacher is taken as a datum. Accurate or inaccurate, it constitutes an attitude on the part of a "significant other" in the child's life. Attitudes usually influence, sometimes covertly, the behavior of those holding them. If a teacher values a child for his particular ways of satisfying the teacher's own needs, two things are likely to follow: (1) the teacher will demonstrate his positive valuation of the child repeatedly in his behavior, and (2) through the operation of generalization, the teacher is likely to distort his perceptions of the child in various areas in favorable directions--the halo effect.

From this point of view, the perceptions of the teacher about the child constitute a potential variable of some power for predicting change in children's learnings. Sullivan (1947) has emphasized particularly the influence of the reflected appraisals of significant others in the formation of the self-concept, but there are other possibilities. The teacher who positively values a given child no doubt behaves more gently and thoughtfully with respect to that child than he does to others who are less valued. This is favoritism, granted. The question becomes one of what effects this has on the child. Does the teacher who sees a child positively actually do a better job of teaching with that child. Can he do this and also preserve the child from the onus of being a favorite? In any event, the teacher's perceptions of the child form a significant set of variables for study as to their predictive power in children's achievements. In the present design a number of ratings by the teacher were used as measures of "classroom conditions." These are given in the framework of variables listed at the end of the chapter.

Teacher liking of children. The teacher's personal enjoyment of having a child in his class is presumed to operate in the same way as the teacher's perceptions of the child; indeed, it is well known that liking and favorable opinions are positively related. For present purposes they have been separated; the teacher's perceptions being judgments of the child's characteristics which can be compared directly to other criteria (peer judgments, test scores, observation of behavior). Liking is a global reaction to the child as a person for which there is no other available criterion than the statement by the teacher.

The peer group and its influence on individual children.

In considering the teacher as a significant other in the child's life, we have been concerned with an adult who represents adult authority, much like the parents. In going to school the child is exposed to a tremendous expansion of his world in terms of the ideas and actions of his classmates. As Sullivan (1947) has described the situation, the development of cognitive schemata is greatly accelerated by the contact with other children, who differ in many of their ideas from the family members. These provide stimulation and the opportunity for the child to test out his own ideas against those of others for consensual validation.

Our own observation in many classrooms have shown clearly that the learnings obtained in school are of many types, not all of which are planned for by the teacher or school authorities. It is probable that many learnings take place through repeated exposure to quite unpremeditated stimuli. For example, the way the child perceives himself as a person able to learn is probably dependent not only on the direct feedback which he receives from making learning trials, but also on attitudes displayed toward his efforts by teacher and peers. Such attitudes are based on expectations of the child, or the reputation he holds in the eyes of the significant others in his environment. Measures of reputation seem to be highly stable over time (Campbell and Yarrow, 1961), perhaps so much so that children who have in fact made genuine changes in personality retain the same image in the eyes of their peers for considerable time. The peers' expectations of the child will be reflected in their behavior toward him. Similarly, the attitudes of his classmates toward the child provide expectations to which the child must react in one way or another. The frame of reference which he uses to judge himself as a learner is formed, at least in part, by these attitudes and expectations of significant others in the classroom environment.

It is, however, quite possible that these attitudes and expectations of others have stronger influence on some children than on others. A bright child, exposed to easy learning material which provides quick and obvious success, may develop a stable self-concept which is little influenced by a teacher's idea that he is disrupting the class by horseplay. The teacher may generalize his annoyance so far that he misperceives the child's real ability, considering him to be low in mental ability as well as classroom decorum, but the child may not be influenced in his self-perceptions by this distortion of the teacher's perception.

On the other hand, we have observed that children who are having some difficulty in the learning process appear to react quite strongly to the opinions of teacher and peers. In this case we hypothesize that anxiety stemming from threat to self-esteem increases the potential significance of others' opinions to the child's own conception of himself. Thus, the resources which the child can mobilize for effective achievement of his own goals are an important consideration as well as the reactions of others to his efforts.

Peer perceptions of children. The foregoing discussion has brought out the potential influence, on the child's learning, of the way he is perceived by his peers. Hence nominations by peers on a number of attributes have been included as modifying conditions, or possible predictors of the educational target variables.

Peer liking of children. Similarly, the popularity of children in the class group is predicted to influence the child's learning outcomes. Buswell (1953), among others, has shown that academic achievement is related to social acceptance by peers. If a child is socially accepted, it is likely that his mental state is more favorable for learning; academic achievement may also make the child a more attractive person to his classmates. Degree of liking of the child by his peers has therefore been used as one of the predictor variables.

Agreement between teacher and peer perceptions.

The design of research involved the prediction of target variables (learning outcomes) by the situational variables which have been described. The agreement between the situational variables themselves is of interest. Does the teacher's perception of the child influence the learning outcomes more than does the perceptions of the peers? To what extent do the perceptions of the two groups agree? If there is considerable agreement, does the combined weight of teacher and peers have more effect on the child than if there is less agreement between the two? Such questions are considered as byproducts of the chief purpose of the research, but will be considered in the appropriate context.

Resources of the Child: Initial Status Variables

Children of fifth and sixth grade level bring with them to school in the fall many resources or characteristics which have been laid down genetically or during their earlier experiences. These are the initial status child variables. Some of these may be relatively fixed; some are expected to be subject to change through natural processes of development; some may be quite susceptible to influence of the classroom situational variables.

Fall measurement of target variables.

The research design, of the repeated measurements type, required that the target variables, or learning outcomes, be assessed at the beginning of the year as well as the end. Therefore the six types of targets are also the first initial status variables to be measured. Five of the six were measured in the fall of the research year (September or October), and again in the spring (May or June). The exception is the group of creativity tests; it was not feasible to administer these in the fall and hence there is but one administration--in February. Because of current interest in development of creative type behaviors, these have been retained as a target.

Some additional initial status variables were included: the child's appearance, physical ability, aptitude and motivation. These are regarded as potentially important in prediction of the six outcomes, but not, in this research, as target variables in themselves.

Sex and mental ability as variables.

There is now strong evidence (Kagan and Moss, 1962; Sarason et al., 1960; Kagan, 1963) that boys and girls of elementary school age adopt somewhat different patterns of response to the demands of the culture with reference to the various types of school achievements. Sex differences in the personal goals selected for endeavor were early apparent to us in our observations of children in school classrooms. For this reason, the testing of relationships between predictor and target variables has been done separately for boys and girls. It was expected that boys would prove more accurate and realistic in self-concepts, as found earlier by Brandt (1958). Need achievement was predicted to show greater relationship to actual achievement in boys than in girls (Crandall and Rabson, 1960). Need affiliation and motives for gaining affection were expected to be better predictors for girls than for boys. Social relations, attitudes toward school, and task-oriented classroom behavior were thought to represent areas of greater involvement for girls.

In addition to sex, mental ability constitutes a basic variable in relation to school achievements, being found to account for large proportions of the variance in children's achievements. The bright child has an initial large advantage in entering the academic race, and some advantage in other areas, such as the social. Relations between predictor and target variables should then be somewhat different for bright and less bright children. The population of children was therefore divided into four groups: boys above the mean in mental ability, boys below the mean; and girls above and below. Correlations were computed separately within each group.

The Framework of Variables

DIRECT MEASURES OF CHILDREN

Target variables; learning outcomes; final status; consequents (Spring measurement).

Resources of child, initial status; antecedents or predictor variables (Fall measurement).

	When obtained	N	Method of measurement
1. Self-concept Happy qualities Over-all mean self-rating Over-all satisfaction Over-all expected improvement 9 sub-areas	Fall and Spring 1958-9	195	Self-report inventory
2. Social relations Liking for same sex Liking for opposite sex	Fall and Spring	195	Social distance
3. Classroom behavior Task-oriented work Social work	Fall and Spring	195	Systematic observation
4. Achievement Composite Reading composite Work study composite Arithmetic composite	Fall and Spring	195	Standard tests Science Research Associates
5. Attitudes toward school activities Academic Intensive study Over-all mean 5 factor scores for each sex	Fall and Spring	195	Attitude scale
6. Creativity Plot originality Things fluency Things unusual Object synthesis	Winter only	195	Experimental tests

Other resources of child used as **predictor** or initial status variables

	When obtained	N	Method of measurement
Sex Attractive appearance) Physical ability)	Fall	195	(Teacher rating (Peer nomination
Mental ability			
Composite	Winter	195	Standard test Primary mental abilities
Verbal			
Space			
Reasoning			
Number			
Motivation			
Need achievement	Winter	195	Thematic apperception test
Need affiliation			
Need power			
Anxiety over achievement	Fall	195	Teacher rating
Seek status academic			
Seek status social			
Gain affection peers			
Gain affection teacher			
Intrinsic interest			

MEASURES OF CLASSROOM CONDITIONS

Predictor Variables	When obtained	N	Method of Measurement
1. Teacher classroom behavior Scores on 17 categories, e.g., reward, evaluation, teach by presenting alternatives	Fall and Spring	7*	Systematic observation
2. Teacher attitudes toward school activities	Spring	7	Attitude scale
3. Teacher perceptions of children** Attractive appearance Physical ability Work habits Social virtues Happy qualities Creativity Intrinsic interest Mental ability Seek status: acad. Seek status: social Gain affect: peers Gain affect: teacher	Fall and Spring	195	Teacher rating
4. Teacher liking of children	Spring	195	Social distance
5. Peer perceptions of children Attractive appearance Physical ability Work habits Social relations teacher Mental ability Social virtues	Fall and Spring	195	Peer nominations
6. Peer liking of children Liking by same sex Liking by opposite sex	Fall and Spring	195	Social distance

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* The subjects were 195 children, divided in seven classrooms, each with one teacher. For the first two measures, therefore, the N is 7 with the same teacher score being used for each of the children in the class. The remainder of the measures have an N of 195.

**Used both as a measure of child's resources and as an indirect measure of classroom conditions.

CHAPTER III. PROCEDURE

Research on teaching, like many other kinds of research, may be done in two ways: the experimental and the naturalistic. In experimental designs, teaching behavior is varied by careful plans in advance. Thompson's (1944) year long experiment with two groups of preschool children is a good example, as is Lewin, Lippitt and White's (1939) work with groups experiencing different social climates. Naturalistic variation of teaching behavior involves selection of teachers who normally show differing behavior because of their differing personalities and histories. Changes in the children exposed to the differing teaching behavior are then related to selected aspects of that behavior.

The present project was designed to utilize naturalistic variation in teaching behavior. The teachers used in the research were all "good" teachers, but in some ways they characteristically employed different techniques.

Methods of selection of the teachers to be used were as follows. Three elementary schools from the small suburban city of El Roble* were first chosen for the research setting. Two of these drew from an essentially middle--middle socio-economic population. One was the typical university neighborhood type of public school. Principals of these three schools were cordial to the idea of the year-long research project.

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*A detailed account of the school district, its population, educational philosophies of its schools etc. is given in Sears and Sherman (1964).

Within these schools, the teachers of the fifth and sixth grades were informed of the conditions of the research. All agreed to participate, and remained fully cooperative during the year. The sample of seven teachers and their classrooms is thus roughly representative of the teacher and child populations of the three schools.

The following arrangements were made for conduct of the research. Observation of children and teacher-child interaction was to be done by the research team, tests to be administered by the teacher after consultation as to how they might best be introduced to the children as normal parts of the school program. Ratings were to be done by the teacher, who was paid a small yearly stipend for the out-of-school time required. Scoring of tests was done by the research group, and profiles of the children's scores were fed back to the teacher to be used at his discretion for the improvement of instruction.

The research group consistently refrained from evaluation of teacher or child behavior, and were friendly and supportive in their relationships with the participating teacher and the entire school staff. Arrangements for the research had been early agreed upon with the central administration of the school district and with the building principal, but no reports were made to them of any results or impressions by observers. All contacts were directly between the participating teacher and the research group, and these were always harmonious. Members of the research team spoke at the school's PTA, but no special point was made to the parents which revealed particular children involved in this research. There were several projects in progress at the school during the time of this one.

The teachers appeared to enjoy the research year. They felt that their own insight into needs of the children was enhanced by having to formulate their own observations, and that the quality of their instruction was improved by this. For the most part, the teachers seemed to like having observers in the room. Our experience is that this is true of most teachers who have a reasonable feeling of competence in their work and their relations with children, if they are secure in the confidence that observations and test results will not be used evaluatively in improper ways. The teachers were not aware of the specifics of the category system used for observation of teacher-child interaction.

Two other projects were carried out simultaneously with the main project in the seven upper grade classrooms. Three first and second grade classrooms in one of the schools were studied by methods which were identical for measurement of the teacher variables, but differed in some respects for the child variables. The data from this project are referred to as the primary grade data, and results will be reported for comparative purposes. In addition, ten children from one of the upper grade classrooms, and an equal number from one of the primary grades, were designated as case study children. They were made subjects of more intensive individual study both by the research team and by special observation and report from the teacher. These children were also followed for an extra year in addition to the regular research year. Results on this case study project are presented in Sears and Sherman (1964).

Sample

The children.

Complete records of scores were obtained for 195 upper grade children; 100 girls and 95 boys. About 14 children had to be dropped because they moved from the class before the year was over, or entered after the fall testing had been done. The mean estimated IQ for the group, based on a composite score for the Primary Mental Abilities test, was about 115. About 10 or 15 children in the sample of 195 had IQ's estimated to be in the 80's, while the top score on the PMA (probably an underestimate) was equivalent to an IQ of 140.

For data analysis, the total sample of 195 was divided by sex and by mental ability, taking the PMA mean IQ of 115 as the division point. The "low" PMA group was designated as of "average" mental ability, and the high group as "superior." The numbers in each group were as follows:

Superior boys	47
Average boys	48
Superior girls	49
Average girls	51

There are not more than one or two boys in the superior ability group who are not above the mean for their particular class, as well as for the total sample. The other groups worked out similarly. Generally speaking, therefore, a "superior" boy is superior in his own immediate group setting as well as according to national norms.

The teachers.

The seven teachers used in the project included two women and five men. None was inexperienced, although one had taught only three years. Their ages ranged from 24 to 43. The guiding philosophy of the school district at the time provided for modern educational methods, humanistic and individualized instruction. At the same time, considerable freedom was given teachers for developing teaching methods most congenial to them. The data to be presented later (see Chapter X) indicates, for example, that among our sample of seven teachers, the per cent of time spent in teaching directed toward an individual rather than a group varied from 5.8 per cent to 70.7 per cent.

Instruments used with Upper Grade Children

Self-concept Inventory.

Development of instrument. The self-concept instrument is a group administered questionnaire. It is designed to cover ten areas: physical ability, mental ability, social relations with same sex, social relations with opposite sex, attractive appearance, social relations with teacher, work habits, social virtues, happy qualities, and school subjects. The child's (1) satisfaction with himself in each area, (2) his prediction as to whether he will or will not improve, and (3) his self rating in comparison to other members of the class are readily obtainable from an approximately one hour testing session per class. The areas included in this inventory were empirically derived from a composition a 6th grade class wrote on "The Kind of Person I Am and The Kind of Person I Want To Be." Those areas which the children tended to mention with relative frequency were included in the test and many statements were used verbatim.

Ten items are assigned to each of the ten categories, all of them being given equal weight in terms of their contribution to the total category score. The items were arranged in a cyclical fashion in the 100 item test. Those relating to physical ability are numbered 1, 11, 21, etc. Those relating to mental ability are 2, 12, 22, etc. The children recognized this, of course, and sometimes commented on it. The teacher responded, in effect, that the questions were not exactly the same, although similar to one another. A specimen blank may be found in Appendix A.

Administration. The most natural way of introducing the questionnaire was discussed by the teachers in a group. All of the teachers stressed the use such knowledge of the children would be to them and/or the child's own benefit from thinking about his own strengths and weaknesses. One such rationale for the administration was as follows: the class was studying modern California when the test was given and at the particular time they were studying the roads and network of roads throughout the state of California. The teacher related this to the children personally by saying that in the planning of a trip we had to see what roads were available and what things were necessary to take on the trip. So too, at the start of a new year, one has to see where one wants to go and make plans for getting there. This questionnaire, it was said, would provide an opportunity to do some figuring on their own to find out how to get there, how to get these things accomplished. At the spring administration, the classes discussed how their ideas about themselves might or might not change during the year, and hence their responses might (but might not), be different than they had been on the previous occasion. The instructions were varied to suit the time of year.

The teachers presented the instrument as a serious, confidential task of self-analysis for the children. Public remarks were discouraged. A few difficult words were put on the board or read aloud.

For the most part the children responded well to this administration. A few, probably highly insecure or defensive children omitted a number of items, or marked the blank in symmetrical patterns. Scores were not computed from these.

Scoring. Three types of scores are available:

1. Self-rating. ("Compared to others in my class, how do I rate now?") Responses: "Very good" scores 9; "Better than a good many" 7; "Better than average" 5; "Fair" 3; "Not very good" 1. Note that the distribution is skewed a little toward the "good" end--this was done after pretesting showed that a better distribution of scores resulted from this. Class averages range from 4.3 to 6.3 out of a possible 10 for each area (as physical ability). The overall mean, based on 100 items, is an average with 100 as the denominator. Sub-area scores, as happy qualities, are based on 10 items.

Reliability. Split-half reliabilities, based on one class, were as follows:

Overall mean self-rating	.95
Happy qualities self-rating	.79
Satisfaction	.94
Improvement	---

Stability. Fall--spring, test--retest, based on the large sample (N = 195), produced the following stability coefficients:

	Superior Boys	Average Boys	All Boys	Superior Girls	Average Girls	All Girls
N	47	48	95	49	51	100
Overall mean self-rating	.67[a]	.29	.47	.48	.52	.50
Happy qualities self-rating	.65	.67	.66	.48	.63	.56
Satisfaction	.26	.57	.45	.43	.42	.43
Improvement, expected and felt	.43	.14	.29	.34	.48	.41

Social Distance Scale.

Development of instrument. The Social Distance inventory is a brief and easily administered group test. It is a form of sociometric measurement, and has the advantage, over the customary three sociometric choices, of producing scores for every child in the room. The form used here is modified slightly from Cunningham (1951).

Administration. In a period of approximately 20 minutes, during which time each child individually ranks every other child on a scale ranging from 5 (would like to have him as one of my best friends) to 1 (dislike him), the child's feeling about every other child in the class is obtained. He is asked, when he comes to his own name, to rate as he thinks his classmates feel about him. For instructions and specimen blank, see Appendix.

Most of the teachers reported that the children responded readily to the test although a few noted that the children felt somewhat uncomfortable about rating their classmates in this way. It was felt, however, that by repeating the reasons for administering the test (i.e., work groups) and the naturalness of preferring some people to others, the children were relatively comfortable with and accepting of the test. It is our experience that secure teachers, who have good relations with their students, take the use of such instruments as a natural part of their job of understanding the children better. With this attitude the children respond seriously and do not chatter injudiciously about their ratings of each other. One useful thing to remember is that it may be better not to schedule the administration of one of these instruments directly before recess; some other activity should intervene before the children go out to socialize.

Scoring. The scoring of the test involves a breakdown into three general categories: To score "liking for others," the individual child's completed blank was used. The column "would like to have him as one of my best friends" was given a weight of 5, other columns 4, 3, 2 to 1 for "dislike him." The child's score on "liking for others" was the mean of his ratings for every other child in the room, excluding himself. Sub-scores of liking for same sex and liking for opposite sex were also computed.

Scoring of popularity, or liking by others involved obtaining scores for this child from each of the other children in the room and taking the mean of these. This was also done for same and opposite sex to sex of child.

Reliability. A class was divided in odd-even fashion, with an equal number of boys and girls in each half, and the mean rating a child gave to each half of the class computed. These two ratings were then correlated across all the children in the class and the Spearman-

Brown formula applied. This was done for two classes (total N = 62) and the reliabilities were averaged. A similar procedure was followed for the rating by others. These reliability figures were:

Liking for others, both sexes	.95
Liking by others, both sexes	.90

Stability. Fall--spring correlations, N = 195 are as follows:

Liking for others, both sexes	.55
Liking by others, both sexes	.77

The difference between these figures and the reliabilities is highly significant.

Classroom behavior observations

Development of the method. Development of the interaction behavior sample technique for measuring some salient features of the children's classroom behavior was carried out over a period of a year by a number of people connected with the Laboratory of Human Development's project on achievement and self-esteem motivation in elementary schools.*

On the assumption that overt behavior is a function of the resolution of conflicts between underlying motives, it was desired to develop a method for sampling children's classroom behavior which would meet certain specifications:

1. The method, or instrument, would be sufficiently reliable to be representative of a child's behavior at a given stage in his development, under certain specified external conditions. These specifications were to be rather broad so that naturalistic classroom situations could be used.

2. The method, on the other hand, would be sufficiently sensitive to show effects of conditions hypothesized to be influential in modifying behavior, for example changes in seating arrangements, in activities having differing characteristics, and in classes having teachers utilizing different techniques and patterns of interaction with the

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*The original category system was developed jointly by Mary Goldworth, Richard Alpert, and Pauline S. Sears. Later modifications were provided by Margaret H. Pintler, Jane Kriser, and Joyce Hanna. Observers from Fall 1957 through Spring 1959 included Rosalee Clarke, Marlene Terwilliger, Paul Wanner, Surang Kowatrakul, and Barbara Baxter.

children. One of the desired outcomes was to measure changes in children's behavior over a year in a given environment.

3. The category system would be exhaustive, i.e., all classroom behavior could be placed in one or another category.

4. The method would involve a low degree of inference, i.e., judgments on categorization of behavior would be fairly simple to make.

5. Training of observers would not be a time-consuming task.

6. Data could be gathered over a relatively short time.

7. The method could be applied at any elementary grade level.

The aspects of behavior to be examined by this sampling method were generally three: (1) appropriate task orientation, where the appropriateness was generally set by the teacher or the mores of the room; (2) social orientation, i.e., initiating or responding to other people in the room; and (3) internal orientation, i.e., response to instigation from within rather than from outside stimulation.

Method. The method used was that of point time sampling. The observer sat or stood unobtrusively where he could view all the members of the class. Following the order on the scoring sheet, he glanced at the first child, indicated by a symbol his behavior at that moment, and immediately went on to score another child. The scoring was continued until all members of the class had been covered. This completed a single round of classroom behavior.

The scoring sheets had been set up with the boys and girls listed separately. If, because of pupil movement within the room, it was found that by following the order on the scoring blank two children who were in close proximity to each other were being scored in sequence, the order on the blank was not followed. The child was omitted for the moment, and several others scored before the observer came back to score that child's behavior. This was felt to be necessary from a theoretical point of view in order to insure that relatively independent samples of behavior were obtained for each child.

Since the categories used involved a judgment on the part of the observer of what the ongoing task of the class was supposed to be, scoring was not begun until the teacher had made this clear. Usually he indicated specifically what he expected the class to do, and as soon as the observer felt that the situation had been defined for the pupils and they knew what was expected of them, scoring was begun. Therefore, the time sampling technique was applied only to organized situations within the classroom. The brief periods when the pupils were entering or leaving the room or socializing before the teacher got them settled on a definite area of study were not sampled. It was also found that the categories did not lend themselves to any observation of behavior during recess or physical education period. Most observations were carried out in the morning, the complete morning session of three hours (minus recess time) being used.

Actually in categorizing behavior the observer was assuming the point of view of the teacher in assessing whether a behavior was related to the ongoing task, was of an academic or non-academic nature, etc. It was found that some familiarity with the teacher's attitude of what was permissible was necessary, especially in the lower grades where the program is less organized and the children are much more free to choose their own activities. Some observation was done in a kindergarten class, but it proved too difficult for observers to pinpoint appropriate task-oriented behavior for the scoring of task-oriented work and social work. At all other grade levels, first through sixth, the method appears to be applicable.

The length of the unit of behavior that was scored was determined by the length of time it took the observer to make the judgment of the child's behavior and record the scoring symbol. Generally this was an almost instantaneous procedure, and it was generally possible (at the sixth grade level) to score an entire class of 34 children within a four or five minute period. At the first grade level, 21 pupils could be scored within two or three minutes. If it was impossible for the observer to score when he first glanced at the child, he continued to observe him until he could make a judgment regarding the behavior he had first observed.

Task-oriented work. This was defined as follows: The child is intent on the ongoing work or discussion, task-oriented, is doing what he is supposed to be doing. Includes actively working on the task and also collecting, getting out, organizing or putting away materials necessary for work. Includes thoughtful staring when the child seems to be involved in the work task. Key phrase is oriented to work. The behavior is generally conforming to classroom routine, and generally non-social.

Social work. Definition: Any social remark, interchange, or action which is work-oriented. Reserve this category for the expression of social needs in relation to work tasks. Child may initiate social contacts in relation to his own work or respond to another child's work. Children explaining task to each other, noting each other's progress, showing own progress on task, giving or getting suggestions in regard to work, actually cooperating and sharing a task socially. In discussion any direct verbal contribution and also any evidence of an attempt to contribute such as raising his hand, or asking the teacher a question about his work.

Other categories used for the child's behavior were as follows: social friendly (no work connotation), wandering, daydreaming, intent on other academic work (child is work oriented, but in an individualistic way compared to the rest of the group), and intent on other, non-academic work (child is busy with some project of his own, not oriented to the school program). Complete definitions are given in Appendix A. Behavior was categorized into one of these seven categories. Frequencies in one category are not, then, independent of frequencies in other categories.

Reliability. Reliability of observation, measured by percentage of agreement between two observers categorizing behavior at the same moment, was about 90 per cent. Trait reliability, or the consistency of the children over a period of time, was estimated by correlating first and second halves of 210 observation rounds taken over a three week period. This correlation was .60.

Stability. Fall-spring correlations were found to show sex differences, with girls, particularly those above the mean in mental ability, more stable than boys. The figures for task-oriented and social work are as follows:

	Superior Boys	Average Boys	Superior Girls	Average Girls
Task oriented work	.17s	.20	.64**a	.35*
Social work	.20s	.20	.54**	.22

Achievement Tests

Administration. Certain tests of the Science Research Associates (1957) series were administered by the classroom teachers, according to instructions accompanying the tests, in fall and again in spring.

Reliability. Split-half reliabilities quoted by the authors for these tests range from .79 to .91.

Composites. These were derived for total reading, total work study, total arithmetic, and also for an over-all composite. The separate part scores were first converted to z scores, using the formula

$$z = \frac{16}{\sigma}(x) - \left[\frac{M}{\sigma}(16) - 50\right]$$

The parts were then averaged.

Stability. Fall-spring correlations were high for all composites (above .80) for boys. Girls' stability coefficients were as follows: overall composite, .86; reading composite, .68; work study composite, .68; arithmetic composite, .80.

Attitudes Toward School Activities

Development and administration. The long name of this attitude scale is "Attitudes towards subject areas and classroom activities." It consists of 80 items to be marked for five degrees of liking:

Like very much	Dislike sometimes
Like sometimes	Dislike very much
OK, but not wild about	

The items are designed to cover a wide variety of subject areas, including the use to which the subject matter is put. For example, "handwriting, formal drill," "being careful of handwriting in everyday writing," "creative poetry (making up poetry)." Items representing types of activities were included, e.g., "listening to classmates explain things," as well as items referring to procedures and atmosphere in the room, e.g., "having another student help you with your work," "letting people talk and move about as much as they like." The items are designed to cover the wide variety of experiences children may have in modern, rather non-regimented classrooms, and to evoke attitudes in relation to them. A copy of the instrument may be seen in Appendix A.

The attitude scale was administered by the classroom teacher, and was easily assimilated into the class program. The teachers introduced it by explaining the value, both to the class and to himself, of understanding which aspects of the school program the children were comfortable with, as well as where problem areas lay. The children had little difficulty in understanding the items, and in addition seemed to have clearly formulated feelings about them. Administration time is from 20 to 30 minutes.

Scoring. The scores used in the present analysis are as follows: academic, intensive study, over-all mean, five scores for boys based on factors emerging from a factor analyses, and five factor scores for girls.

The academic score covers 58 of the 80 items (first two pages) representing areas of school activities characterized as follows:

The 3 R's
Everyday use of the 3 R's
Self expression
Intensive study
Helping and being helped
Taking tests
Assuming public position
Silent participation
Working with others

It represents the "work" aspects of school life, and also methods of approaching the work.

Intensive study as a score was picked out of the academic score because of interest in the motivational aspects of children's attitudes and behavior. It includes the following items:

Science experiments or demonstrations
Science research reading
Social studies research reading
Going more deeply into work related to school work
Organizing and writing reports
Having long periods in which to do work more thoroughly
Having homework

Overall mean is the average score for all 80 items, including, in addition to the academic items, liking for limits and for permissiveness in classroom control, and the following of individual interests. A high score represents a general, nonspecific favorable attitude toward what goes on in the classroom.

The factor scores will be described in the chapter on results obtained from the use of this scale.

Reliability. Test-retest, over a three month period for one class, was .93.

Stability. Fall-spring test-retest gave the following results:

Fall-spring correlations, attitude scale

	Superior Boys	Average Boys	Superior Girls	Average Girls
Attitudes				
Academic	.70**a	.24	.53**	.44**
Intensive study	.62**a	.16	.58**	.39**
Overall mean	.53**	.23	.39**	.50**

Creativity Tests

General considerations. Creativity tests were chosen to measure the child's divergent thinking ability and to gauge the influence of the classroom on its strength. After a search of research and available tests, it was decided to use the Guilford factor tests (1956). It would be interesting, we felt, to obtain normative data with these tests on our population, which is much younger than the navy recruits which Guilford used.

Guilford has used approximately 75 tests in his factor-analytic studies of divergent thinking processes, and has obtained a set of nine main factors, with tests that seem to show these factors adequately (factor loadings above .40). Our choices were made from these tests. There was some question regarding their scoring because for many of the tests objective scoring is not possible. However, these tests also best tapped the factors we wanted to measure. It was decided to use these tests if high enough inter-scorer reliability could be obtained.

Choices were made from among the most likely tests on the basis of the number of different factors which could be scored, ease of scoring, the adaptability of the test for children's use, previous research information, and our own intuitive liking for the tests themselves. We could not tap all nine factors because of time limitations. The six tests chosen and the factors represented are listed below. One test came from Dr. Carson McGuire at Texas and was chosen because it was a good open-ended test.

Guilford's factor	Test	Scoring Method
No. 6 Ideational fluency	Plot titles	Fluency
	Thing categories	Fluency*
7 Originality	Plot titles	Originality*
	Thing categories	Unusual*
	Object synthesis	No. acceptable responses*
	Apparatus	Originality
	Apparatus	Unusual sets
10 Spontaneous flexibility	Object synthesis	No. acceptable responses
	Apparatus	Flexibility
16 Adaptive flexibility	Match problems	No. correct
25 Sensitivity to problems	Apparatus	Fluency
29 Redefinition		
37 Closure		
39 Associative fluency		
53 Word, verbal fluency	Sentence Gestalt	No. correct

---

*Starred scores were used in the present data analysis.

Administration. Tests were administered by the teachers themselves, with instructions to follow explicitly the instructions on the front of each test and to observe timing scrupulously. Some teachers administered the whole battery at once. However, most teachers spread the tests over a week. Administration time for the battery of six tests was 94 minutes.

Reliability. Reliability of the scoring procedures was established, and is reported below. Reliability of the test scores is reported by Guilford as from .64 up. In the present study, these tests were given only once, in the middle of the school year. Intercorrelations are high between things fluency and things unusual, in the 70's; but lower between the others--from .28 to .50. No composites were made of the creativity test scores.

Scoring.

1. Plot originality. The child reads four short mildly shocking plots, and is asked to give clever, novel, interest-arousing titles for each. The quality of responses for each plot was assessed as a whole, on the basis of aptness, catchy quality, novel use of wordage, conciseness, and unwillingness to use phrases from the text of the plot itself. The upper 20 per cent was given a score of three, the next lower 30 per cent a score of two, the next lower 30 per cent a score of one, and the lowest 20 per cent a score of 0. Range of scores was from 0 to 12. Time limit was five minutes for each of four plots. Inter-rater agreement on scoring was .65.

2. Things fluency. The child is asked to write as many things as possible that are (1) round or could be round, (2) soft, (3) sharp, (4) green. The score is the simple number of responses given, irrespective of quality, with a range in our sample from 0 to 99. Four minutes was allowed for each category.

3. Things unusual. This is an originality measure, represented by a total of all the good and unusual responses for all four sections of the thing categories test, the same as the above. "Good" means that the scorer could see some possible, sensible, correct and not absurd relation between the adjective presented and the object named. For the criterion of unusual, frequency distributions were made up of the actual responses given by the children. Those given very infrequently by this group were scored unusual. Only those responses which were both good and unusual were counted in the final score. The range was from 0 to 33.

4. Object synthesis. The child is given two objects and asked to think of something which could be made by combining them. Some examples of pairs of objects were sheet of paper and glue, push broom and coat, clamshells and shoelace. The score is a simple total

of all "acceptable" responses. Acceptable answers were identified by reference to a key, furnished by Guilford. Scoring reliability between two observers was .94. Time limit was 14 minutes.

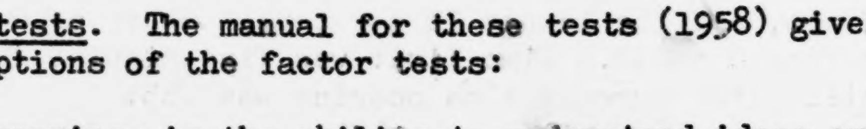
Primary Mental Abilities

Scoring. As a measure of differential mental abilities, the Science Research Associates (1958) PMA tests were chosen, since they give scores on five different factors of human intelligence. In order to get enough ceiling for our group of youngsters, it was necessary to use two forms of the test: the form for ages 7--11 and the form for ages 11--17. Four of the factor tests overlap in these two forms: verbal, space, reasoning, and number. Mean s scores were computed for each of these, and a composite score was formed based on a non-weighted sum of the mean s scores for each of the sub-areas. A correlation of this composite with WISC total scores for one class was .83.

Reliability. The authors of these tests report reliabilities for the factor tests of above .89. Intercorrelations between factor tests are not high; with space from .17 to .34, and among the others from .33 to .50. These tests were given once only, in the winter, so that there are no stability coefficients for them.

Content of tests. The manual for these tests (1958) gives the following descriptions of the factor tests:

> Verbal-meaning--is the ability to understand ideas expressed in words. This ability is essential to activities in which information is obtained by reading or listening to words. Verbal-meaning is measured by the synonyms type of test item.
>
> Ancient: A. Dry B. Long C. Happy D. Old
>
> The word that means the same as the first word is to be marked. There are five practice items and fifty test items. Time for this test is four minutes.
>
> Space--is the ability to visualize objects in two or three dimensions. This ability is perhaps best described as the ability to imagine how an object or figure will look when it is rotated and to see the relations of an arrangement of objects in space. Space is measured by twenty items similar to the one below:



Every figure in the row that is the same as the first figure, even though it is rotated, is to be marked. Figures that are mirror-images of the first figure are not to be marked. There are six practice items. Time for the test is five minutes.

Reasoning--is the ability to solve logical problems. It is one of the most important of the mental abilities. The person with good reasoning ability can analyze a situation on the basis of past experience, and make and carry out plans according to recognizable facts. Reasoning is measured by items like the following:

a b x c d x e f x g h x | h | i | j | k | x | y |

The letters in the row form a series based on a rule. The problem is to mark the letter that should come next in the series. The test is made up of ten practice items and thirty test items, and the time limit is six minutes.

Numbers--is measured by a test with items of the following kind:

```
17
84   R  W
29
140
```

The sum of each column of figures is given, but some of the solutions are right and others are wrong. The answer given is to be marked as right or wrong. Five practice items and seventy test items are given with a time limit of six minutes.

Thematic apperception test

Development of instrument. Pictures for this test were pretested by Richard Alpert at Harvard. The series, entitled the Children's Picture Interpretation Test, contains pictures found to produce achievement, affiliation, and power imagery in children of 5th and 6th grade level. Unlike other picture series, some pictures of girls as well as boys are included. It is planned for group administration, with children writing their responses.

Pictures were as follows:

C-1	Father at table talking to boy, sister listening
C-2	Boys talking on playground
C-4	Girl petting donkey
C-16	Two boys and teacher at board
C-22	Teacher or artist giving art lessons
C-12	Laughing class group, boys and girls

2

Administration. The time for this test was planned as after recess or after lunch. Pictures were projected on a screen after instructions had been read and discussed. Instructions described the test as storytelling--finding out what kind of stories 5th or 6th graders can think up on their own when they really let their imaginations go.

The following questions were put on the blackboard, to be used as a guide:

What is going on? Who are the people?
What happened in the past to lead up to this situation?
What are the people thinking? Do any of them want anything? What do they want?
What will happen afterward? What will be done?

Time limits of six minutes were used for each picture.

Scoring. The following definitions of the three motives were used (Atkinson, 1958):

1. Need achievement. An individual is said to have an achievement motive when he displays in his stories an achievement goal, i.e., there is success or failure in competition with some standard of excellence.

2. Need affiliation. Motivation to be socially accepted. Stories contain some concern over establishing, maintaining, or restoring a positive affective relationship with another person, i.e., love or friendship.

3. Need power. Motivation indicating concern with the control of the means of influencing a person, or wanting to attain control of the means of influence, doing something to gain such control, or feeling good about having control.

Test responses were scored by a person trained by the Atkinson group who had previously established reliability of scoring.

Reliability. Atkinson (1958) reports a corrected reliability estimate of .65 for need achievement. The present project used the test once only in the winter, so there are no stability coefficients available.

Peer perceptions of children: peer nominations

Development of instrument. The "Guess Who" type of instrument goes back to the character studies of Hartshorne, May and Maller (1929), and has been cogently discussed by Cunningham (1951). Scores from such an instrument represent the reputation which a child holds in the eyes of his classmates. The technique involves presenting the child with various behavior descriptions and asking him to "Guess who" among his classmates best fits the description.

In the present research, the behavior descriptions paralleled the areas tapped for the self-concept inventory, i.e.:

*Physical ability
*Mental ability
Social relations with same sex
Social relations with opposite sex
*Attractive appearance
*Social relations with teacher
*Work habits
*Social virtues
Happy qualities
School subjects

Items were prepared for both positive and negative reputation in the various areas. For example, the two items for physical ability are as follows:

(1) Here are some people who are outstanding at outdoor activities which require physical ability (tetherball, volleyball).

(2) These people are not so good at outdoor activities. They may be good at other things, but not outdoor activities (chess, model cars).

Scoring. The score for each child on each of the areas is computed by counting the number of times he is nominated by classmates for the positive item, and subtracting from this the number of times he is mentioned for the negative item.

Stability. Fall-spring correlations on this measure were high; .64 was the lowest and most were in the .70's. Reliability, or internal consistency of the score at one administration, cannot well be calculated. Correlating the single positive and single negative items would of course produce high negative correlations. Split-half techniques would measure how consistently the child is reacted to by the various members of the group. Intercorrelations between scores for the separate areas are generally sizable, but not as high as the fall-spring correlation for one area.

Peer liking of children: Social distance

Scores for this variable came from the social distance instrument described on page 29. Liking by the same sex and liking by the opposite sex were two variables from this instrument incorporated in

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*Starred items were used in the present data analysis.

the present design. Reliability and stability figures are given on page 30.

Instruments used with teachers

Teacher perceptions of children: Teacher ratings

Development of instrument. Teacher ratings were obtained for a number of aspects of the child's personality. For some of the areas, such as work habits, mental ability, and creativity, the purpose was to get the teacher's view on a personality attribute for which there was already available another measure. Classroom observed behavior can be related to rated work habits, PMA test scores to rated mental ability, and creativity test scores to rated creativity.

Secondly, teachers' ratings were used as a measure for several child characteristics for which there were no objective outside measures available, but for which there were self-ratings and peer nominations. These were attractive appearance, physical ability, social virtues and happy qualities.

Finally, teachers were asked to infer strength of several types of motives from their observations of recurring behavior in the child.

Definitions of the behavior to be rated were carefully worked over with the teachers in conference. When the rating was to be related to self-concept measures, part of the definition consisted of items taken directly from the self-concept inventory. Rating of motive strength is a difficult task, and for these an entire page of definition was provided, including numerous behavioral examples. The definitions used are shown in Appendix A. Areas rated were as follows:

Child characteristics:

*Attractive appearance
*Physical ability
*Work habits
*Social virtues
*Happy qualities
*Creativity
*Mental ability

Child motive strength:

*Seeking status: academic
*Seeking status: social
*Gaining affection from peers
*Gaining affection from teacher
*Intrinsic interest
Anxiety over achievement

Starred areas were used in the present data analysis.

Procedures. There are two serious potential difficulties in ratings as a source of useful data. One is the tendency toward leniency, or excessive use of the favorable end of the dimension. The other is the adoption of different frames of reference by different raters. In the present design, seven teachers were to be the raters, each for his own class group. The data from the seven were to be pooled, so some assurance was needed that leniency and frames of reference were comparable among teachers.

The device adopted was to ask the teacher to use his own class group as a frame of reference, dividing it, on each dimension to be rated, into four groups. The low group was to contain approximately 20 per cent of the children in the class, the medium low and medium high groups approximately 30 per cent each, and the high group 20 per cent. Thus the child's position is assessed relative to his own class group, rather than to some absolute standard. There is no skew in the distribution of scores.

Both the self-rating measure on the self-concept inventory and the peer nominations instrument also employ the current class group as the frame of reference, so measures from the three types of judges are similarly based. In a self-contained classroom, the bulk of the child's experience in evaluation of himself is with the class group, so that this arbitrary anchoring of the rating scales appears justifiable.

One teacher rating scale, physical ability, was used separately for boys and girls. On all others the entire class group of approximately 28 children was rated on one scale. Mental ability was rated once during the research year, in the winter; all other scales were used in the fall and again in the spring.

Stability. The teachers did not have available to them their fall ratings when they did the spring ratings; however, they may well have remembered some of their fall placements. During the research year, also, they had received feedback of test scores and profiles of the children coming out of the fall round of testing. Presumably the memory factors should serve to increase the fall-spring correlation, and the feedback to increase the relationship of teacher ratings to outside measures. In any event, fall-spring stability coefficients ranged from a low of .49 for the motive of gaining affection from the teacher to a high of .76 for physical ability. Intercorrelations between the various dimensions are high within the child characteristics group of dimensions, but generally insignificant between child characteristics and child motive strength dimensions.

Teacher liking of children: social distance

Teachers filled out the same social distance form which was used for the children, indicating their personal liking for each child in the class. This was done once only, in the spring.

Teacher attitudes toward school activities

Teachers also filled out the same attitude scale as the children, indicating how well they liked the various subject areas and classroom activities. The teachers' completed forms were then scored for their agreement with the five factors found for boys, and also for the five girls' factors. Descriptions of the factors will be given in the chapter on attitudes.

Teacher classroom behavior

The method used for sampling the teachers' classroom behavior is described in Chapter X.

Analysis of data

Mean differences between sex and ability groups

Means and standard deviations for the groups divided by sex and ability were first examined for significant differences. Tables showing these are given in Appendix B, and are discussed in the chapters which follow.

Intercorrelation matrix by sex and ability groups

The basic method used for analysis of the data was the production of zero order correlation matrices of 246 variables, including fall and spring measures on the children and teachers. A matrix was constructed from these correlations for each of the six groups: (1) superior boys (N = 47); (2) average boys (N = 48); (3) all boys (N = 95); (4) superior girls (N = 49); (5) average girls (N = 51); and (6) all girls (N = 100). In the chapters which follow, prediction of the six target variables is undertaken chiefly by use of a selected number of these zero order correlations.

Factor analyses

Varimax factor analyses, described by Kaiser (1962) have been used on portions of the data: self-concepts, attitudes, peer nominations, teacher ratings, and teacher classroom behavior.

Multivariate techniques.

In consultation with Lee Cronbach (1961) a program was devised for multivariate analysis of selected portions of the data. The method provides a means of examining the unique contribution of certain variables, as well as multiple correlations.

Code for the tables showing correlations between predictor and target variables

The 246x246 variable correlation matrices which form the main part of the data provided an enormous number of relationships to consider (30,135 x 4 sex - ability groups = 120,540). Some of these relationships can be used directly to test theoretical conceptions, some suggest new and perhaps startling ideas, some are nonsensical as far as we can see, and some no doubt arise by chance. Replication on new samples has been done for a good many of the findings, by our group or by others, and will be reported at the appropriate points.

In the chapters which follow, six groups of target variables have been selected: self-concepts, social relations, classroom behavior, achievement test scores, attitudes, and creativity. These represent behaviors, performances, or self-reported feelings of the children. The prediction of these target variables is the chief objective of this analysis.

Predictor variables fall into four groups: (1) child variables other than the target variable; initial status of child; (2) teacher and peer perceptions of the child; (3) teacher classroom behaviors, measured by the teacher interaction sample; and (4) teacher attitudes toward school subjects and activities.

1. Child variables, other than the target under consideration. In this section the hypotheses involved are of the following type: the child who has good self-concepts will tend also to show favorable attitudes toward school, perform well on creativity tests, and have harmonious social relations with his classmates. Here the target variable from one chapter becomes the predictor for another. Since fall and spring scores are available on most measures, the extent to which a spring score is predicted by a fall score on the same instrument is of interest. Predictor variables, in addition to the six groups of target variables, include scores from the Primary Mental Abilities tests and from the Thematic Apperception Test. Correlations of this type are presented in one or more standard tables for each chapter.

These tables include correlations only if they are in excess of plus or minus .20, except that in cases where significant differences obtain between groups or fall-spring, the r's for all groups have been put in for comparative purposes, regardless of their size.

The N for each of the sex-ability groups is approximately 50. The double asterisk (**) indicates an r significant at the .01 level (r = approximately .38 or better), and the single asterisk (*) significant at the .05 level (r = approximately .28).

Breaks of the total sample of children were made on sex and on mental ability, measured by a PMA composite score. The ability break was made at the mean for this sample, a score approximately equivalent to an IQ of 115. Thus, the superior boys group have PMA scores from roughly IQ 115 up; the average boys from 115 down.

Correlations for the different sex-ability groups, and for fall-fall, fall-spring, and spring-spring scores have been compared.* A significant difference (.05 or better, two tailed) in correlations of two groups of the _same sex_ but different _ability levels_ (e.g., between superior and average boys or girls) is shown by an (a) in the column for the superior group. A difference of this significance level between _sexes_ of the _same ability_ (e.g., between superior boys and superior girls) is shown by an (s) in the boys' columns. Finally, a difference between fall-fall and spring-spring correlations within the same sex-ability group is shown by an (f), placed in the spring column.**

2. The second type of table represents the same child target variables described in the preceding section, with _teacher and peer perceptions of the child_ as predictor variables. A sample hypothesis to be tested from these correlations runs as follows: the teacher's

---

*Spring predictor, fall target correlations have not been included in the tables. These will appear in another chapter when the predictor becomes the target.

**Where the test of significance is between fall-fall and spring-spring r's on the same group, little is known about the error involved in the test of significance.

perception of the child as attractive in physical appearance will tend to be associated with higher scores for the child on achievement tests. These tables are set up for each chapter, and the same code described under 1. above has been used for significance of correlations and the differences between correlations. A single composite target variable has been used for each of the six groups of targets; there is thus only one table showing perceptions of others as predictors for each of the six chapters.* Certain of the teacher rating and peer nomination measures have been omitted in the interests of space conservation; the correlations for these are not greatly different from those included.

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*With one exception. The creativity tests represent sufficiently different cognitive abilities, according to our present state of knowledge, that four separate target variables have been included in this area. There is only one score (winter) for each of the creativity tests, rather than fall and spring as the tables show for the other targets.

CHAPTER IV

SELF-CONCEPT SCORES AS TARGET VARIABLES

Introduction

This chapter is the first of six in which the various "achievements" or learnings of elementary school children have been taken as target variables, in order to determine what characteristics of the child and situational variables of the classrooms predict the given target. Here we are concerned with self-concepts as a target variable. What personality correlates are there of a child's own reported self-concept? What appear to be the meanings ascribed by the child to the self-ratings and what is the validity of the child's self-report? How stable over time does this self-report remain? How accurate or realistic is the reported self-concept, as compared to outside and perhaps more objective measures such as tests and opinions of other people? What social influences within the classroom, such as the opinions and behaviors of teacher and peers toward the child, are related to the height of the child's self-concept? What is the effect of sex of the child and his ability level on the relations produced by the predictors?

The Self-concept Scores

Overall mean self-rating.

In Chapter III the instrument used to obtain self-concept scores has been described. The administration of this instrument was done in the classroom by the teacher, in as serious and thoughtful vein as could be achieved. The aim was to provide a non-threatening atmosphere for the child in his evaluation of himself. Since defense of the ego, the instrumentality of the self-concept report to the subject, and considerations of social desirability may influence such a report (Wylie, 1961), the administration conditions were carefully planned to minimize such factors. And since there is no one good outside criterion for determination of the validity of a self-concept score, other than the score itself, care in administration is imperative. Throughout this chapter, the relationships to be described will build into a picture of how this self-report is used by the child to evaluate his own strengths and weaknesses and to provide for defense of his own ego. At the end of the chapter the concept of validity will be re-examined.

As has been reported, the self-concept instrument was administered under similar conditions in the early fall and the late spring. It consisted of 100 short items. These items fell into 10 areas on which the child was to rate himself:

Physical ability
Mental ability
Social relations with the same sex
Social relations with the opposite sex
Social relations with teacher
Physical appearance
Work habits
Social virtues
Happy qualities
School subjects

Items were designed to cover those main areas of concern for a child of elementary school age which are clearly related to the school situation. There was little in the inventory which related to parent-child relations, or specific out-of-school relations.

Each of these 10 areas, consisting of self-ratings for 10 different items, was scored separately for an overall mean self-rating:

"Very good
Better than a good many
Better than average
Fair
Not very good."

The child's average response to the 10 items of each sub-test was coded onto a 9-point scale in which 9 was the high end. For our sample, the average self-rating made by the children came between the point "Better than average," and the point "Better than a good many." It will be noted that we had purposely made the midpoint of the 5-point scale "Better than average" rather than "Average." This was done because we discovered, as have other investigators (Brandt, 1958), that children have a tendency to place their self-concepts somewhat above average. Such a mean self-rating is perhaps justified in the present group of children, most of whom are above average in mental ability, health, and socio-economic position. At any rate it probably indicates a healthy state of affairs in the feelings of confidence that these children have about themselves.

Over the 10 areas of self-rating, there were some differences in the mean scores. Social relations with the opposite sex received the lowest self-rating from all groups of children. This is not surprising when one recalls that these were 5th and 6th grade children, for which this kind of social relationship presents a rather serious developmental task. The area receiving the highest mean self-rating from both groups of boys, those of superior ability and those of average ability, was the self-rating for the area of physical ability. Both groups of girls gave their highest mean self-ratings to the area of social relations with the teacher.

Mean differences between sex and ability groups.

Between our sex-ability groups, there were some significant differences, which are shown in Tables B-1 and B-2 in Appendix B. The superior boys gave themselves significantly higher self-ratings than the average boys in the area of mental ability, social relations with the opposite sex, and on the overall mean self-rating, based on the total 100 items, in the fall only. The superior girls and the average girls did not differ significantly from each other in any area. The superior boys rated themselves better than the superior girls on physical ability and on mental ability. The average girls rated themselves above the average boys on social relations with the opposite sex. Since there were 10 different sub-areas, these significant differences in means do not seem to be as numerous as one might expect. Overall, the sex-ability groups of children employed quite similar self-ratings. Since the superior groups of boys and girls did not differ in tested mental ability, the more favorable self-ratings made by the boys are psychologically significant. In the case of the comparison of the superior boys with average boys the significant differences in self-ratings of mental abilities reflect accurately the mental ability test scores of these groups.

Since the 10 sub-areas of the self-concept instrument were set up on logical bases, factor analysis was performed to see how separate these 10 areas actually were in terms of their interrelationships. The principal axis solution of this factor analysis provided one and only one strong factor. This was true for all the sex-ability groups, and held for both fall and spring scores. Therefore, while we had originally planned to deal with the separate sub-areas of self-concept, the revised plan is to deal with scores from the overall self-concept mainly, and to put less stress on differentiation of self-concept among the various areas.

Happy qualities self-rating. One sub-area, the self-rating of happy qualities, has been considered separately in the tables which follow. This area is one which possibly reflects, in the most clear-cut fashion, the self-esteem of the child, since it does not depend immediately on his native talents but rather on his attitudes toward himself and toward life. Self-rating of happy qualities is a mean rating for the following 10 items:

Being comical or humorous
Being confident, not shy or timid
Getting a lot of fun out of life
Not expecting everything I do to be perfect
Having lots of pep and energy
Enjoying myself in school
Being able to change things when they don't suit me
Getting along without worrying too much
Liking to live as I please
Being able to live my own life

The other chief target variable utilizing self-ratings is the overall mean, which is based on the total of 100 items, including the 10 for happy qualities.

Satisfaction with self. Two other self-concept measures were asked for on the instrument. The first was satisfaction with self. The question asked of the child was the following: "Am I pretty well satisfied with myself in this? (Check yes or no)." The score is the number of "Yes" answers out of 100 items, or the over-all percentage of satisfaction. On this the mean scores for the sex-ability groups, fall and spring, varied from 65% satisfaction to 70% satisfaction, with no significant differences between means for the groups, nor between fall and spring responses.

Improvement, expected and felt. An improvement score was obtained by asking the child, "Do I think I may make some improvement before the end of the year? (Check one) I think I may make some improvement; I probably won't make any change." This form of question was used in the fall, and in the spring the question was changed to get at felt improvement: "Do I think I have made some improvement during the past year?" These improvement scores also were calculated as percentages of the total 100 items, and ranged from 55% yes answers to 62%. Only one group showed a marked change from fall to spring: the superior girls indicated, in the spring, that they felt they had improved less than they had anticipated in the fall.

Description of tables showing zero order correlations.

The following tables, then, will report correlations found between four target variables of self-concept:

Happy qualities
Over-all mean
Satisfaction
Improvement

For each of these relationships are shown a number of predictor variables which are also characteristics or performances or behaviors of the child himself. These are Tables 1, 2, 3 and 4. Table 5 reports the relationships between overall mean self-concept and the perceptions of other significant people in the classroom with reference to the child -- the teacher and peers. In Chapter X will be found tables showing relationship between overall mean self-concept and 1) the teacher's interactive behavior with children in the classroom, and 2) attitudes of the teacher.

These tables and those in the five chapters to follow on other target variables follow a consistent organization. The description of this organization and the coding of the tables is reported on page 45.

Self-concepts in boys with superior ability.

The remainder of the chapter will be devoted to short profiles of the relationships found in particular sex-ability groups. What are the significant predictors of self-concepts in boys of superior ability? From Table 1, we see that self-concepts of happy qualities are highly related, in the superior boys, to overall mean self-ratings. Curiously, these boys show low relations between happy qualities and general satisfaction with self. Possibly because of their abilities and secure position in the classroom, they can tolerate a statement of lack of satisfaction with the self, while still presumably enjoying their happy qualities. To them, perhaps, aspirations of moving onward and upward in their own good time appear to be feasible as they may not to less talented children.

Further the happy quality scores are independent of liking for either boys or girls. For general classroom behavior, negative relations appear with the ordinary industrious task-oriented work of the classroom. Perhaps these boys are more carefree in their attitude toward industry, if they have high happy qualities.*

---

*They are also high on non-conforming classroom behavior, a category which was not used in the correlations presented in Table 1.

Achievement test scores are not correlated with the self-concept of happy qualities. No doubt all of these boys achieve a reasonably good level on the achievement tests because of their native ability, and the further differentiation of high scores does not relate to scores on happy qualities. Their attitudes toward school and activities as measured here are generally weakly positive with happy qualities. However, creativity scores show strong positive correlations. From the TAT we get a negative relation with need power, which becomes quite strong in the spring prediction of happy qualities.

These characteristics seem to add up to the following: the superior boy who is high on happy qualities is an original, creative type who seems to enjoy himself in the classroom, without necessarily working very hard, scoring very well on achievement tests, or holding strong positive attitudes toward school.

For those boys, the overall mean self-rating (Table 2) shows much the same picture. With this self-concept score, there is also some relation with PMA scores. The overall mean self-rating does not correlate with satisfaction with self or self-improvement in the spring, suggesting again that these boys have the ego strength to accept the fact that they are not particularly satisfied with their performance, or that they have not improved very much, but still maintain their overall self-evaluation independently.

When the satisfaction and improvement scores are taken as target variables (Tables 3 and 4) we find that social relations comes up more strongly as a predictor. Liking for the same and for the opposite sex

Table 1 TARGET VARIABLE: SELF-CONCEPT - HAPPY QUALITIES

PREDICTOR VARIABLES ↓ (CHILD VARIABLES)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall-Happy qual.					.65**	.67**	.48**	.63**
Overall mean	.81** a	.47** s	.75**	.86**	.62** a	.33*	.38**	.54**
" satisfact	.29	.37**	.58**	.49**		.45**	.24	.31*
" improve	.22 s	.05 s	-.21 a	.48**	.29 s		-.20 a	.38**
Spring-Happy qual.								
Overall mean					.85**	.88** f	.93**	.94**
" satisfact					.02 a	.49**	.41**	.54**
improve						.24	.23 f	.25
2. Social relations								
Fall								
Liking for same sex								
Liking for opp sex		-.09	.31*					
Spring								
Liking for same sex								
Liking for opp sex						.23 f	.22	
3. Classroom behav'r								
Fall								
Task oriented work	-.21 a	.39**			-.22 a	.21		
Spring								
Task oriented work					-.29* s		.15	
4. Achievement tests								
Fall								
Total composite	.19		.14	.21				
Reading "								
Work study "	.19			.20				
Arithmetic "			.08					
Spring								
Total composite					-.06 f		-.09 f	-.03 f
Reading "								
Work study "					-.15 f			
Arithmetic "							-.17 f	
5. Attitudes								
Fall-Academic	.25		.43**	.43**	.38**		.27	.28*
Intensive study		.20	.39**	.40**	.43**			.25
Overall mean			.31*					
Spring-Academic					.27	.43**	.33*	
Intensive study					.27	.32*	.32*	
Overall mean					.25	.40**	.30*	
6. Creativity								
Winter								
Plot originality	.39** a	-.08	.47**		.33*		.34*	
Things fluency	.34*			.34*	.39** a	-.07		.28*
Things unusual	.29*		.26	.28*	.31*			
Object synthesis	.20	.27		.27				
7. Primary mental abils. Winter								
Total composite	.21			.20				
Verbal	.23		.24					
Space			-.28					
Reasoning							-.26	-.23
Number					.17 a	-.21		
8. Motives from TAT								
Winter								
Need achievement								
Need affiliation								
Need power	-.25 s		.22		-.48** a	.00		.20

Code on page 45

Table 2 . TARGET VARIABLE: SELF-CONCEPT OVERALL MEAN

PREDICTOR VARIABLES (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall-Happy qual.	.81**a	.47**s	.75**	.86**	.65**	.59**	.56**	.56**
Overall mean					.67** a	.29*	.48**	.52**
" satisfact	.37*	.10 s	.37*	.60**		.50**	.33*	.37**
" improve	.35*s,a	-.11 s	-.28 a	.31*	.33* s		-.16 a	.34*
Spring-Happy qual.					.85**	.88**f	.93**	.94**
Overall mean								
" satisfact					.07 a	.57**f	.41**	.51**
" improve						.29*	.18 f	.25
2. Social relations								
Fall								
Liking for same sex								
Liking for opp sex		.10	.27				.29*	
Spring								
Liking for same sex								
Liking for opp sex						.34* f	.23	
3. Classroom behav'r								
Fall								
Task oriented work		.28				.29* s		-.15
Spring								
Task oriented work								
4. Achievement tests								
Fall								
Total composite		.24		.32*				
Reading "		.24		.24				
Work study "				.26				
Arithmetic "	.22	.27		.27				
Spring								
Total composite								-.01 f
Reading "								
Work study "								
Arithmetic "						-.02 f		-.05 f
5. Attitudes								
Fall-Academic	.29* a	-.17 s	.31*	.43**	.33*		.36*	.28*
Intensive study	.25	.05 s	.34*	.47**	.41**		.27	.26
Overall mean		-.16	.30*				.21	
Spring-Academic					.30*	.48** f	.34*	
Intensive study					.35*	.38**	.26	
Overall mean					.23	.45** f	.33*	
6. Creativity								
Winter								
Plot originality	.34*		.28*		.35* a	-.09	.32*	
Things fluency	.22	.25	-.09 a	.39**	.36* a	-.21 s		.31*
Things unusual	.22	.20		.27	.22			
Object synthesis				.29*				
7. Primary mental abils. Winter								
Total composite	.23				.33* s		.13	
Verbal	.31*		.21	.27				
Space						.20 s		-.17
Reasoning					.11 s		-.30*	-.21
Number					.26 a	-.20		
8. Motives from TAT								
Winter								
Need achievement		.28						
Need affiliation		.28						.21
Need power					-.30*			.22

Code on page 15

Table 3 TARGET VARIABLE. SELF-CONCEPT - OVERALL SATISFACTION

PREDICTOR ↓ VARIABLES (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall-Happy qual.	.29	.37**	.58**	.49**		.36*		.44**
Overall mean	.37*	.10 s	.37*	.60**		.25		.39**
" satisfact					.26	.57**	.43**	.42**
" improve	.30*		.09 a	.53**			-.05 a	.38**
Spring-Happy qual.					.02 a	.49**	.41**	.54**
Overall mean					.07 a, f	.57** f	.41**	.51**
" satisfact								
" improve					.45**	.64**	.09 a	.56**
2. Social relations								
Fall								
Liking for same sex	.35*							
Liking for opp sex	.30*	.23	.25			.32*		
Spring								
Liking for same sex					.30*		.36*	
Liking for opp sex					.25	.37**	.27	.22
3. Classroom behav'r								
Fall								
Task oriented work						.23		
Spring								
Task oriented work							.23	
4. Achievement tests								
Fall								
Total composite	-.01			.27				
Reading "				.25				
Work study "				.27				
Arithmetic "	.11	-.20		.17				
Spring								
Total composite					.21 f			-.24 f
Reading "								-.32* f
Work study "								
Arithmetic "					.24 a, f	-.15		-.20 f
5. Attitudes								
Fall-Academic	.51**	.39**	.47**	.62**		.27		.23
Intensive study	.51**	.47**	.39**	.57**		.38**		
Overall mean	.48**	.44**	.43**	.45**		.37*		
Spring-Academic					.39**	.47**	.45**	.26 f
Intensive study					.31*	.36*		.37**
Overall mean					.37*	.48**	.30*	
6. Creativity								
Winter								
Plot originality	-.11 s		.43**a	-.03	-.17 s		.22	
Things fluency		-.20 s		.25	.20 a	-.19		
Things unusual			.24			-.27		
Object synthesis				.21				
7. Primary mental abils.-Winter								
Total composite								
Verbal		-.21 s	.22	.26				
Space		.39**s	-.25	-.09		.23		
Reasoning					.21 a, s	-.23	-.23	-.32*
Number								
8. Motives from TAT								
Winter								
Need achievement	.23							
Need affiliation	.28					.22		
Need power								

See code, page 45.

Table 14. TARGET VARIABLE: SELF-CONCEPT - OVERALL IMPROVEMENT

PREDICTOR VARIABLES (Child Variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall-Happy qual.	.22 s	.05 s	-.21 a	.48**		.22		.24
Overall mean	.35*a,s	-.11 s	-.28 a	.31*	.24	.23		
" satisfact	.30*	.18	.09 a	.53**	.45**s	.27	-.02	.30*
" improve					.43**		.34*	.48**
Spring-Happy qual.						.24	.23 f	.25
Overall mean						.29* f	.18 f	.25
" satisfact					.45**	.64**f	.09 a	.56**
" improve								
2. Social relations								
Fall								
Liking for same sex	.35*		.21				.28*	
Liking for opp sex		-.01						
Spring								
Liking for same sex					.29*		.37**a	-.07
Liking for opp sex						.27 f	.24	
3. Classroom behav'r								
Fall								
Task oriented work								
Spring								
Task oriented work								
4. Achievement tests								
Fall								
Total composite			.23					
Reading "			.28 a	-.16				
Work study "					.15 a	-.27		
Arithmetic "		-.14						
Spring								
Total composite							-.03 f	
Reading "							-.05 f	
Work study "								
Arithmetic "						-.26 f		
5. Attitudes								
Fall-Academic	.31*			.42**	.34*	-.21		
Intensive study	.20			.29*	.26			
Overall mean	.10			.25	.28			
Spring-Academic					.54**	.38**		.00 f
Intensive study					.43**	.33*		
Overall mean					.54**s,f	.36* s	.09	-.07
6. Creativity								
Winter								
Pict originality							.20	
Things fluency								
Things unusual								
Object synthesis		-.26			-.13 s	.20	.33*	
7. Primary mental abils.-Winter								
Total composite		-.25	.38**a	-.05			.22 a	-.23
Verbal			.21					
Space		-.21					.21 a	-.19
Reasoning								
Number	.29* a	-.17	.23		.26			
8. Motives from TAT								
Winter								
Need achievement				.23				
Need affiliation		.22				.25		
Need power								

See code, page 45.

is related to improvement. Also, the presence of positive attitudes toward school activities is more striking, particularly in the spring for these boys who feel they have improved over the year.

Table 5 presents prediction of overall mean self-rating by the perceptions of significant others in the classroom environment -- the teachers and peers. For the superior boys the prediction is weak indeed. Out of 59 correlations, only two reach minimal significance: teacher ratings of intrinsic interest and work habits. All other relations to self-concept are insignificant. Two teacher ratings show negative relations: that for gaining affection from peers and that for teacher liking of the child. This means that the higher the boy's self-concept self-rating, the less the teacher likes him and the less he is seen as seeking to gain affection from other children.

These findings confirm the earlier impression that these superior boys are able to maintain good self-concepts while remaining quite independent of the opinion of others. The situational variables of the classroom represented by others' perceptions do not appear associated with self-concept overall mean.

On the other hand, satisfaction with self is correlated with sociability (liking for other boys .35 from Table 3) and strong positive attitudes toward school, but not with creativity. The same is true, in these superior boys, with the correlations with overall improvement.

These different findings for the four scores from the self-concept instrument suggest differences in predictors for the boys who report themselves as high in relation to classmates (overall mean self-rating, happy

Table 5. TARGET VARIABLE: SELF-CONCEPT OVERALL MEAN SELF-RATING

PREDICTOR VARIABLES ↓ of (perceptions/others)	Fall Scores				Spring Scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings								
Fall								
Attractive appear.		.34*	.31*	.45**		.32*		.20
Physical ability	.20			.23				
Work habits	.21	.24	.22	.23	.31*	.20		
Social virtues		.21	.24	.22		.29*	.22	
Happy qualities		.21		.22		.24	.24	
Creativity	.27		.22	.34*				
Intrinsic interest	.29*	.23	.26	.25	.24	.27		.22
Seek stat: acad.	.22			.29*	.20		-.06 a	.42**
Seek stat: social								
Gain affect: peers		-.03				.23	.31*	
Gain affect: teach		-.02						.22
Spring								
Attractive appear.					.27	.33*	-.03 f	.35*
Physical ability						.23		
Work habits					.21	.35*	.22	.30*
Social virtues						.35*		.31*
Happy qualities						.40**		.23
Creativity					-.05 f			
Intrinsic interest						.28		.28*
Mental ability						.27		
Seek stat: acad					.28	.35*	.22	.29*
Seek stat: social						.23		.34*
Gain affect: peers					-.23 a, s	.44** f	.17	
Gain affect: teach						.37* f		
2. Teacher social distance								
Spring								
Teacher liking for child					-.19 a, s	.29*	.23	
3. Peer nominations								
Fall								
Attractive appear.	.21			.23	.20			
Physical ability				.29*				
Work habits		.28		.24		.28		.20
Soc. rel. with teach		.24		.27		.30*		.20
Mental ability		.21	.25	.41**				.33*
Social virtues						.26	.21	
Spring - Attract. appear					.27			.33*
Physical ability								.22
Work habits						.22		.41**
Soc. rel. teach						.34*		
Mental ability								.34*
Social virtues						.23		
4. Social distance								
Fall								
Liking by same sex			.24					
Liking by opposite sex		.22	.25	.22			.20	
Spring								
Liking by same sex								
Liking by opposite sex							.22	

See code page 45.

qualities self-rating) and those who profess themselves to be satisfied with self, or to expect improvement. Those high in self-rating are also high in creativity but low in liking by the teacher and in task-oriented work. Perhaps the teacher regards them as overly independent and cocky as was found by Getzels and Jackson (1962) for creative youngsters, but this does not lower the boy's self-concept.

On the other hand, those superior boys who anticipate improvement and report satisfaction with self 1) like others, 2) are liked by them, particularly the opposite sex (.27, .32*, not shown on tables), and 3) hold positive attitudes toward school. These boys show no remarkable creativity. Apparently they have a good bit of self-confidence, but perhaps do not parade it objectionably. Teachers like the bright boys who anticipate improvement over the year (.31*, not on tables), and rate them high in social virtues (.42**, not on tables).

Which comes first is not clear: the boy's attitude of expecting improvement, or the teacher's favorable opinion giving support to his expectations.* What is clear is the association between favorable opinions of others and the superior boy's statement that he expects improvement. In contrast, the superior boy's evaluation of himself in relation to classmates (overall mean self-rating) is independent of others' opinions. The inference is plain: bright boys can evaluate themselves highly in relation to their classmates if they possess strong egos which do not depend on favorable reactions from others. If they feel they still can improve, the teacher is inclined to view them more favorably than if they indicate that they do not expect to improve.

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*The cross-lagged panel correlation technique used on the next page shows no appreciable difference between fall-spring and spring-fall r's in this case.

Self-concepts in boys with average ability.

It will be remembered that these boys that are called "average" in their ability are below the mean of the group as a whole in tested mental ability, and in all but one or two cases, below the mean of their own classroom. These average boys are less stable from fall to spring than the superior boys in their overall self-concepts (Table 2), show positive relations between task-oriented classroom behavior and self-concepts, but low relations between creativity scores and self-concepts. There are many high ratings by the teachers in relationship to high scores of self-concept (Table 5), and the teachers clearly like these average boys if they have good self-concepts. The peers see them as getting along well with the teacher and with other boys. Strongly related to spring self-concepts are the motives for seeking to gain affection from peers and from teacher. These boys seem to see themselves as happy and adequate if they get along well with peers (particularly girls) and teachers, and if they are industrious, likeable, hardworking, and not particularly original. There is more than a suggestion here of susceptibility of the self-concept to the perceptions and feelings of other people; these boys change considerably from fall to spring in the ways that have been reported. Perhaps the classroom environment and the attitudes of those in the classroom have significantly progressively more effect on them during the year. Table 2 shows six significant changes from fall to spring in this group of boys, with none for the superior boys. Table 5 shows two impressive gains in strength of relation to self-concept for the motives of seeking to gain affection from peers and teacher.

Campbell and Stanley (1963, page 238) propose a technique called "cross-lagged panel correlation" which purports to suggest a one-directional causal inference from repeated correlations on the same groups. An "effect" should correlate higher with a prior "cause" than with a subsequent "cause." With the present data, we may ask the question, are teacher attitudes of seeing the average boys as seeking to gain affection from peers "causing" higher self-concepts in those boys who are high on seeking to gain affection? Secondly, is this causal direction more prominent in the average than the superior boys? The needed correlations are as follows:

TABLE 6: Self-concept overall mean x teacher rating, seeking to gain affection from peers.

	Self-concept, Overall Mean			
	Superior Boys		Average Boys	
Teacher rating, gain affection, peers	Fall	Spring	Fall	Spring
Fall	-.13	-.03	-.03	+.23
Spring	-.15	-.23	+.08	+.44**f

Stability: Fall-spring correlation	Superior Boys	Average Boys
Self-concept, overall mean	.67**a	.29*
Teacher rating, gain affection, peers	.27	.60**

For the average boys, fall teacher rating predicts spring self-concept (.23) better than fall self-concept predicts spring teacher rating (.08); however, this difference is insignificant. This suggests that the teacher's attitude tends to be more influential on the child than vice versa. The spring-spring correlation (.44) is highly significant, and differs significantly from the fall-fall correlation of -.03. No positive correlations appear for the superior boys. Furthermore, the stability coefficients show the self-concept to be more stable in the superior boys, and the teacher ratings in the average boys.

The hypothesis that happy qualities in the average boys is more dependent on other-directed motives than in the superior boys suggests also that peers and teachers may have less good perceptions for the superior as compared to the average boys, as how the children actually do feel about themselves. The following Table 7 shows that correlations between self-concepts and the judgments of others are close to zero for the superior boys but positive and substantial for the average boys.

TABLE 7: Agreement between self-concept and others' perceptions.

	Self-concept, Happy Qualities			
	Superior Boys		Average Boys	
Teacher rating, happy qualities	Fall	Spring	Fall	Spring
Fall	.03	.15	.27	.34*
Spring	.08	.19	.40**	.47**
Peer nominations, happy qualities				
Fall	-.09	-.07	.19	.26#
Spring	-.01	-.11	.28	.36*#

[#] Significant difference between average and superior groups, one-tailed test. The difference between TR, fall x SC spring (.34) and TR, spring x SC fall (.40) is not significant.

Adding up the various bits of evidence, the following appears a reasonable hypothesis for future test: boys of superior mental ability are more independent of others' opinions than are boys of lesser ability in setting their self-concepts. Teachers' attitudes may have considerable influence, over a year's time, on how the boy of average mental ability regards himself.

One further point: In this particular sample, the average ability boys started the year, in the fall, with self-concepts significantly lower than those of the superior boys. By spring, however, the difference disappeared through a significant rise in the mean for the average boys. This group had evidently been able to work out, during the year, ways of enhancing their own self-esteem. The previous discussion suggests the methods by which this was done. Note that good achievement according to test is not one of these; although there are some positive relations between self-concept and achievement in the fall, there are none by spring. The road to self-esteem is not through this channel for boys who are low in mental ability.

Self-concepts in girls with superior ability.

What predicts self-concepts of happy qualities and overall in bright girls of 5th and 6th grade level? Tables 1 and 2 show the following: liking for boys, favorable attitudes toward school, and originality of thinking. These correlates of happy qualities for this age of girl should cause no surprise. Good achievement according to test is not related in this group of girls, nor is classroom behavior.

Unlike the superior boys, PMA scores relate slightly negatively to self-concepts, particularly in the spring: the higher the PMA score, the less good the bright girl's mean self-concept.

Results for the satisfaction and improvement scores are similar, with two exceptions. Liking for other girls is positively related to satisfaction and improvement. And, realistically perhaps, the bright girl shows positive relations between her expected (and felt) improvement and the height of her score on PMA.

Table 5 shows correlates of self-concept which reflect perceptions of teacher and peers. Here there are few significant relationships; two of a possible 59. For the girls of average mental ability, there are 16. The same finding appeared for the boys and may be generalized thus: self-concepts of children of superior mental ability are mainly independent of the opinions of teacher and peers whereas for children of lower mental ability, these opinions prove significant predictors of self-concept. This points up the importance of teacher-pupil and pupil-pupil relationships for the self-esteem of the less able children.

For the superior girl, then, self-concept may be predicted by her degree of liking for her classmates, particularly boys. The classmates' and teacher's opinions of her do not, however, make much difference in the height of her self-concept. There is some suggestion that in this group of bright girls, higher mental ability relates negatively to self-concept. Originality of thinking shows up as a positive predictor.

Self-concepts in girls with average ability.

Finally, what are the predictors of self-concept in the less able girl? First, the various self-concept scores are highly inter-correlated, both fall and spring. This suggests an integrated approach to self-evaluation; the girl responds to the different self-concept sets in much the same way. She either feels good about herself or she doesn't -- and her feeling is quite stable over the year. However, the predictors of self-concept show some changes from fall to spring. In the fall, achievement test scores are fairly good predictors, while by spring the achievement correlations with self-concept are negative. Evidently this channel does not pay off for maintenance of self-esteem. The same finding appears in the results for the average boys, while for the superior boys there are some positive relations between spring achievement and satisfaction with self.

Task-oriented classroom behavior does not predict self-concept, as it does for the average boys. The most striking positive predictors are the group of creativity tests: things fluency, things unusual, and object synthesis. Plot originality is not a predictor, as it was for the superior boys and girls. The other three creativity tests, however, are an interesting correlate of self-concept for these average girls. With their lesser mental ability, they are able to keep fairly high self-concepts if they have the assets given by fluency and ingenuity in thinking.

Already pointed out has been the strong influence of teachers' and peers' perceptions on self-concept in average girls. If they are seen by others as having good mental ability, work habits, being motivated to seek status through academic means, etc., they tend to hold favorable self-concepts. This is true even though all correlations with PMA test scores and self-concepts are negative in this group. Possibly the peers' judgment of "mental ability" is influenced somewhat by the mental functions tapped by the creativity tests which also predict self-concept in these girls.

As compared with the average boys, the significant predictors of self-concept in the average girls emphasize more strongly others' perception of them as academically rather than socially or affectionally oriented: strong predictors are seeking status through academic and work habits for the girls whereas the strongest for the average boys are happy qualities and gaining affection from peers and teacher.

Accuracy of self-concept.

For each of the 10 sub-areas of the self-concept instrument, outside measures were obtained in a variety of ways. The peer nomination (PN) instrument was designed to tap exactly the same 10 areas. Teacher ratings (TR) were made for six areas. The classroom behavior observations got at work habits, the PMA test at mental ability, and the achievement tests at school subjects. Thus means are available for testing "accuracy" of self-concept -- or perhaps better, the agreement between the self-concept and the outside judge or measures.

Initially, two hypotheses were made with respect to accuracy of self-concept:

1. When accurate perception of reality would suggest poor ability in a valued area, mechanisms of defense will enter in strongly to the reported self-concept. These defenses are expected to result in self-concepts which are less tied to the objective reality.

2. Agreement between self-concept, and the opinions of significant others in the child's environment is expected to be stronger in children having less natural advantage in the school activities because of lesser mental abilities.

After the data were in, and it became clear that there were some striking inaccuracies in the self-concept of the girls of superior mental abilities, an additional post hoc hypothesis was formulated:

3. Girls of superior mental ability, at 5th-6th grade level, will show some confusion or lack of accuracy in evaluating and reporting their own mental ability.

Table 8 gives correlations brought together to show relative strength of correlation between the five types of "judges": The self, the peers, the teacher, tests, and outside observers.

The data with reference to the first and third hypotheses are given in the correlations between self-concept and the primary mental abilities test (PMA), under the heading mental ability. It will be seen that the superior boys show strong relationships here, thus demonstrating considerable accuracy of self-rating in comparison to test results. All other groups, average boys, superior girls, and average girls, show much lower correlations. Under the area of school subjects, self-concepts are compared with scores on the SRA achievement tests. Here the results are not clearly in favor of the two hypotheses, although there appears to be a decrease from fall to spring in both groups of girls in the accuracy of self-perception as shown by agreement of scores on achievement tests.

Table 8. Correlations Showing Agreement of Five Types of Judges: Self (Self-concept), Peers (Peer Nominations), Teacher (Teacher Ratings), Test (PMA, SRA), Observer (Task-oriented Work).

	FALL - FALL				SPRING - SPRING			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
Physical ability								
SC x PN	.22	.29*	.24	.33*	.40**	.15	.25	.35*
SC x TR	.45**	.30*	.32*	.36**	.58**	.39**	.34*	.35*
PN x TR	.63**	.37**	.60**	.57**	.75**	.57**	.65**	.67**
Mental ability								
SC x PN	.19	.15	.22	.39**	.19	.32*	.30*	.38**
SC x TR	.31*	.40**	.35*	.28*	.28	.49**	.32*	.21
PN x TR	.58**	.61**	.49**	.56**	.59**	.69**	.62**	.69**
SC x PMA comp.	.42**s	.15	-.05	.20	.39**	.05	.07	-.21
TR x PMA comp.	-	-	-	-	.42**	.50**	.12	.33*
PN x PMA comp.	.53**s	.40**	.01	.35*	.58**s	.42**	-.00	.35*
Social relations same sex								
SC x PN	-.01	.15	.11	.10	.17	.33*	.13	.18
Social relations opposite sex								
SC x PN	.48**	.20	.19	.34*	.45**	.29*	.32*	.38**
Attractive appear.								
SC x PN	-	-	-	-	.20	.02	.03	.25
SC x TR	-	-	-	-	.30*	.31*	-.06a	.45**
PN x TR	.33*	.38**	.46**	.33*	.38**	.51**	.49**	.36**
Social relations teacher								
SC x PN	.15	.34*	.05	.28*	.17	.36*	.15	.25
PN x TR	.38**	.27	.29*	.26	.37*	.43**	.51**	.35*
SC x teacher liking	.05	.32*	.14	.02	.13	.33*	.36*	.11
Work habits								
SC x PN	.09	.19	.26	.37**	.22	.27	.10	.43**
SC x TR	.34*	.37**	.26	.32*	.27	.33*	.25	.37**
PN x TR	.44**	.46**	.37*	.57**	.45**	.55**	.58**	.73**
SC x Observed work	-.09a	.31*	-.07	.02	-.29*	-.03	.08	.16
TR x Observed work	.28	.32*	.29*	.42**	.30*s	.15	-.14	.12
PN x Observed work	.35*	.28*	.02	.17	.06	.15	-.06	.20
Social virtues								
SC x PN	.09	.18	.09	-.01	.07	-.02	-.13	.16
SC x TR	-.00	.23	.29*	.24	.23	.29*	.08	.23
PN x TR	.64**	.25	.55**	.16	.62**	.49**	.52**	.43**

Table 8 (continued) -- Correlations Showing Agreement of Five Types of Judges.

	FALL-FALL				SPRING-SPRING			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
Happy qualities								
SC x PN	-.09	.19	.09	-.07	-.11a	.36*	-.14	.08
SC x TR	.03	.27	.17	.20	.19	.47**	.06	.19
PN x TR	.46**	.33*	.29*	.03	.61**	.55**	.54**	.41**
School subjects								
SC x PN	.17	.03	.21	.15	.23	.31*	.08	.32*
SC x SRA composite	.28	.14	.29*	.29*	.13	.11	.02	-.03
PN x SRA composite	.53**	.57**	.30*	.39**	.57**	.43**	.38**	.46**
Total significant r's								
SC x PN (9 possible F 10 possible S)	1	2	0	5	2	6	2	5
SC x TR (6 possible F 7 possible S)	3	4	3	3	2	7	3	3
SC x Test (2 possible)	1	0	1	1	1	0	0	0
SC x Obs. (1 possible)	0	1	0	0	1	0	0	0
PN x TR (7 possible)	7	5	7	4	7	7	7	7

With reference to the second hypothesis, having to do with the stronger influence of peers and teacher in the self-perceptions of children of below average ability, the summary at the bottom of Table 8 shows the number of significant relationships obtained, for each of the sex-ability groups out of the possible comparisons. In the fall, neither of the boys' groups showed many significant relationships to the peer nomination scores, but the hypothesis is clearly supported for the average girls. In the average girls' group, there are five out of nine significant correlations, and in the superior girls' group none. In the spring the average boys show six out of ten significant, while the superior boys have two out of ten; the average girls five out of ten, while the superior girls have two out of ten. Thus the second hypothesis can be seen to have been fairly well confirmed; with the girls of below average ability showing the effect both fall and spring, and the boys showing it in the spring only.

When the teacher is taken as the "significant other" in the comparison, the differences between groups do not show up for girls, but in the spring the average boys show seven out of seven significant relationships with teacher ratings, while the superior boys show only two out of seven.

This finding reminds one of the ingenious experiment of Lesser and Abelson (1959) on the association between self-esteem and persuasibility. First grade children with low self-esteem were found to be more persuasible than those with high self-esteem. However, there was evidence that persuasibility occurs only when the adult communicator indicates to the child the likely possibility that they will agree with each other. In the present study, the groups of below average ability show the greater relationship to teacher and peer judgments, suggesting more persuasibility.

Furthermore, Coopersmith (1959) found children with high self-concepts but low teacher ratings were better academic achievers than those with low self-concepts and high teacher ratings: they were also more self-critical and ambitious. Our superior boys' group, which generally achieves well, has been characterized as relatively independent of teacher opinions, while the average groups show more susceptibility in their placement of self-concepts.

Another test of the hypothesis that threat to self-esteem will provide defensive reaction in the report of self-concept, perhaps putting the self-concept either higher or lower than expected, can be obtained from examination of the relative standard deviation values for self-concept areas as between the groups of average and superior mental ability. These data have not been presented in tabular form, but it may be said that out of 19 self-concept areas, 9 in the fall and 10 in the spring, the standard deviation of the self-concept score was higher for the average boys than for the superior boys 16 times. The three exceptions are on work habits, physical ability, and social relations with the same sex, none of which clearly involve the mental ability dimension. The same comparison made as between average and superior girls show that the average girls have the higher standard deviation 17 times out of 19. Most of these differences between the standard deviations are not significant, but it is clear that the preponderance of higher variability is found in the two groups of below average mental ability.

Brandt (1958) found that boys overrated themselves more strongly than did girls at 6th grade level. For our data, Table 9 shows a comparison between percentages of boys above and below IQ 115 on the PMA reasoning test who fell above or below the mean on self-concept mental ability. More of the low ability boys tend to give themselves a high self-concept than girls (fall), and more high ability girls than boys tend to give themselves a low self-concept (fall and spring). Chi squares show significant association (an accuracy measure) for boys but insignificant for girls.

Russell (1953) gives correlations from groups of 5th and 8th grade children, between self and peer, self and teacher, self and test achievement. The correlations ranged from +.22 up to +.65, approximately the same range as has been found in our data.

Coopersmith (1959), using 5th and 6th grade children, obtained a partial r of +.30 between Iowa achievement test scores (time of administration was not reported) and self-esteem, when sociometric status was held constant. The present data show approximately the same level of correlation between self-concept for school subjects and the SRA achievement test composite, when the scores are taken from fall administrations. The spring-spring comparisons, in the present data are essentially zero, and this same finding has been replicated by Spaulding (1961), using 241 girls and 268 boys of 4th and 6th grade levels, drawn from approximately the same population as for the present group. In fact, in Spaulding's

Table 9 Accuracy of self-concept mental ability

		Primary mental abilities score		
		Low	**High**	
Self-concept mental ability, fall	**High**	**Boys 52%** **Girls 37%**	**Boys 74%** **Girls 51%**	**X^2** **Boys p = .02** **Girls N.S.**
	Low	**Boys 48%** **Girls 63%**	**Boys 26%** **Girls 49%**	

		Primary mental abilities score		
		Low	**High**	
Self-concept mental ability, spring	**High**	**Boys 56%** **Girls 57%**	**Boys 81%** **Girls 61%**	**X^2** **Boys p = .01** **Girls N.S.**
	Low	**Boys 44%** **Girls 43%**	**Boys 19%** **Girls 39%**	

data there are some significant negative relations between self-concept and spring achievement measures, as we found, in the below average mental ability groups of boys and girls. The time of administration evidently may make a difference in the accuracy of self-concepts. When the year begins in the fall, the children perhaps have fewer cues as to the opinions of others in their environment, and to their own statuses as they will develop in the classroom setting. We have seen that the girls seem to pick up these social cues quicker than the boys, and show stronger relationships with opinions of others in the fall than the boys do. By spring, the determinants of self-concept are fewer on the academic achievement side and more, for some groups, in terms of reactions of others in the environment or other attributes of the personality.

For both boys and girls of superior mental ability, the opinions of classmates and teacher about them does not appear to influence self-concepts, whereas these opinions bear strong relation to height of self-concept in the "average" groups of boys and girls, who are actually below the mean of their classrooms in their tested mental ability. This contrast is especially prominent in the spring, after the class has been together for the school year. "Significant others" in the social environment are more important in relation to self-concepts of the less bright as compared to the brighter children, particularly the boys.

Since the fall-spring stability of judgment of the teacher and peers is considerably higher, in most areas, than stability of self-concepts of the average boys, the presumption is that self-concept is being influenced by the opinions of others rather than the reverse. If others think well of them, they tend, over the year, to think better of themselves.*

Creativity of thinking, particularly originality, is associated with good self-concepts in the superior boys and girls but does not predict self-concept in the average boys. It is as if creativity provides a self-actualizing channel to the bright boys, but cannot be used effectively for enhancement of self-esteem by the less bright, who tend to use industrious conforming work and dependency on other people in the classroom environment as the road to self-esteem. Creativity in thinking does not relate differentially to self-concept in the bright and less bright girls' groups. In fact the prediction of self-concept, taking all variables into account, is more similar in the two ability groups of girls, while strikingly different in the two groups of boys. Mental ability apparently dictates ways of securing self-esteem in boys, but is less relevant in the lives of girls of this age.

Discussion: Validity of Self-concept

Self-esteem has been considered, in the present work, to represent judgments of the self in relation to problems and tasks of development. Antecedent to the current level of self-esteem are such factors as the cultural importance of the area within which self-esteem functions, sex or family values for this area, idiosyncratic values developed in a particular family setting. The present study has not investigated these in any systematic way. Another type of antecedent factor is the abilities or competences of the child in the particular area. That these competences are subject to wide individual differences is a hard fact of life to the less able, and a source of possible satisfaction to the more able. We assume that competence in an area which has value for the child is practiced, both initiated by self and by significant others in the environment, and generally leads to interest in the area and favorable attitudes toward it. Self-esteem is supported, in the presence of good ability, through successful performance and respect from others. Specialization probably develops in certain areas in line with ability. Frames of reference held internally by the child may vary and influence the height of self-esteem. Feedback from the environment on the child's performance may vary in the amount and nature.

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*The credibility of the teacher and peers' judgments to the child, or the extent to which the child is willing to incorporate their ideas into his own self-concept, no doubt varies depending on the social stimulus value they present to the child. We have observed, in taking classrooms separately, that correlations between teacher rating and self-concepts are considerably higher with some teachers than with others.

When we come to the function and significance of the self-concept report itself, probable variables involved are factors of defense of the ego provided by variation in the self-concept report, and considerations of social desirability in line with approved cultural and valued judgments of people important in the child's environment. The self-concept report may also be considered as an instrumental response in itself to the enhancement of self-esteem.

Height of self-concept.

With these considerations, we may consider the dynamics of the child's adoption of a self-concept, and its report to others. First, as to height of self-concept and the correlates which have been found to be related to height. The mean differences presented have shown some tendency for boys to present higher self-ratings than for girls. The data do not clearly tell whether this sex difference results from greater modesty on the part of girls, or from stronger defense of the ego used by the boys. It has been suggested that for girls approaching adolescence, the self-perception of high mental ability may present some conflict and tendency to devalue the self, whereas bright boys are realistically able to accept their high mental ability.

Generalization vs. response set.

Ten areas of self-concept were used for determining the height of self-concept measure. When a factor analysis was done using these ten areas, it was found that the variance contributed to the total by each of the ten areas was very similar; all loadings were high. Thus there appears to be a strong factor of generalization from one area to another; the self-concept is a more or less unitary aspect of the personality in spite of the fact that presumably different areas of endeavor are tapped by the instrument. The influence of response set on this finding is, of course, not easy to determine. The subjects were warned in the instructions against over-generalizing; and strong suggestions were made that people are not equally good in all areas. However, the self-rating for the various areas were made with a constant frame of reference from high to low self-rating, and this was not altered for different items. If a strong response set were operating, the stability coefficients, from fall to spring administration, should be considerably lower than the split-half reliability taken at one time. The stability coefficients (over an eight month period) found in this study were high (.67, .48, .52) with the exception of that for the average group of boys (.29). A split-half, from one administration, was .95. Clearly, stability is lower than internal consistency.

Furthermore, three different measures of self-concept were obtained, with different sets of instructions for the three: the self-rating, the satisfaction percentage, and the improvement percentage. For most groups, the correlation between the three measures was high. It is difficult to conceive of a procedure which would test for the presence of response set, and distinguish it from true generalization within the personality. If a "lie" set of responses were included, and if these proved to be highly related to the non-lie items, the argument could be made that this reflected defense on the part of the ego by the subjects responding. It has been shown that accuracy of self-concept, which is a kind of lie score, ties in to the predicted presence of anxiety presumably due to threat of low ability in a valued area. Accuracy for self-concept of mental ability is high in boys who have superior mental ability, and low in boys who do not. It is low in both groups of girls, showing negative relations between test scores and self-concept of mental ability in girls of below average ability. The factor analysis of the self-ratings showed equally high loadings on the single factor obtained for all groups, whether of high or low mental ability. Payne and Farquhar (1962), working with 11th grade students, performed a multiple scalogram analysis of self-ratings from a word rating list. Results showed a first dimension for boys containing 54% of the scaled items. The first girls' dimension contained 62% of the items. In both cases, these dimensions are rather general or global. Brandt (1958) also found positive intercorrelations between accuracy of self-estimates for different abilities.

Furthermore, in the present data, the differentiation score, or standard deviation of a child's mean scores for the ten areas of self-rating, showed higher differentiation for the superior boys as compared to the superior girls, and for the superior boys as compared to the average boys. Correlations between differentiation and the teachers' rating of anxiety over achievement were generally negative; strongly so in the superior boys. This supports the notion that when anxiety over ability is high, differentiation of self-concept will be less.

Whether anxiety promotes a higher degree of response set is an open question. It seems to us that the solution of this problem of response set in connection with reported self-concept will have to wait on some sort of technique for alteration of anxiety states by experimental arousal or reduction of anxiety. Comparison of the differentiation of response obtained under differing amounts of anxiety could then be made. The results obtained show that there is strong generalization occurring under the conditions used for administration of the self-concept instruments in this study. Response set may have existed, but if so it was displayed over an eight-months period, with three different measures of self-concept having different instructions, and with strong injunctions to the subjects to remember that all people differ in their abilities in the various areas. "Response set" seems too weak a term for adequate conceptualization of these facts.

Accuracy of self-concept has been shown to be stronger in boys of superior mental ability, as compared to test scores, weaker in boys of average mental ability and both groups of girls. A hypothesis was advanced post hoc to account for the unpredicted results in the girls of superior mental ability, suggesting that the role of having high intellectual and academic abilities at the 5th-6th grade level may be a source of conflict in girls, but not in boys. Furthermore, it was shown that the influence of the opinions and perceptions of peers is stronger with the children of below average ability. The perceptions of the teacher appear as significant influences in the boys of below average ability, while both groups of girls show equal relations between self-concepts and teacher opinions. Various bits of evidence suggest that in girls of both above and below average mental ability, the relationship to the teacher is a powerful one and the work orientation of girls is greater, particularly in the girls of below average mental ability, than in the boys. This finding has been shown many times in the literature, and probably results from factors starting in the early grades as boys and girls start their school experience. Most recently, Phillips, Hindsman, and Jennings (1960) have shown that in girls of both superior intelligence and average intelligence, correlations between anxiety and self-dissatisfaction are positive. McGuire (1961) finds that junior high school girls value their teachers more positively than boys of the same age.

Parenthetically, it may be said that as well as there being a strong generalization effect in the self-concepts of all our child groups, there also appears a strong halo, or generalization, effect in the perceptions of peers toward the subjects, and of the teacher. Whether this kind of phenomenon is better called a response set or maybe accepted as a fact of human stereotyping, will have to be tested by other means. Teachers, for example, show low agreement between their ratings and test scores for superior girls but high agreement for superior boys (Table 8). Teachers' ratings based on their informal observations of behavior and evaluation of productions of children appear to be more objectively based for boys than for girls. The same holds for peer nominations.

Finally, as to validity of the self-concept. All of the preceding discussion of accuracy, response set, the effect of anxiety induced by low abilities, and the effect of sex stereotypes is relevant here. Outside criteria of validity are involved in the relationships shown under the heading of accuracy: test scores, opinions of teachers and peers, objective time sample observations of behavior. All of these are in a sense irrelevant to the actual validity of the self-concept. The self-concept is known only to the self who is making the responses, and very likely is based upon unconscious as well as conscious motivational factors, thus not being completely known to the respondent himself. Since this study provides correlations involving a variety of reporters in addition to the self, and a variety of methods of report, it is possible to analyze "validity" and "accuracy" in more dimensions and in more areas of self-evaluation than is possible with most studies. Validity of self-concept, in the last analysis, has to be estimated in terms of the predictive value of the scores obtained, and predictions derived from experimental conditions under which the self-reports are obtained.

Mental ability and sex in relation to self-concept.

Finally, the correlates of self-concept have been shown to vary for different ability groups.

For both boys and girls of superior mental ability, the opinions of classmates and teacher about them do not appear to influence self-concepts, whereas these opinions bear strong relation to height of self-concept in the "average" groups of boys and girls, who are actually below the mean of their classrooms in their tested mental ability. This contrast is especially prominent in the spring, after the class has been together for the school year. "Significant others" in the social environment are more important in relation to self-concepts of the less bright as compared to the brighter children, particularly the boys.

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Creativity of thinking, particularly originality, is associated with good self-concepts in the superior boys, and both groups of girls, but does not predict self-concept in the average boys. It is as if creativity provides a self-actualizing channel to the bright boys, but cannot be used effectively for enhancement of self-esteem by the less bright, who tend to use industrious conforming work and dependency on other people in the classroom environment as the road to self-esteem. Creativity in thinking does not relate differentially to self-concept in the bright and less bright girls' groups, with the exception of plot originality. In fact the prediction of self-concept, taking all variables into account, is more similar in the two groups of girls than in the two boys' groups. Mental ability apparently dictates ways of securing self-esteem in boys, but is less relevant in the lives of girls of this age.

Summary

1. For this sample of 5th-6th grade children, self-concept measures are highly generalized, with strong intercorrelations from one area of ability to another.

2. Stability of self-concept, from fall to spring, is generally high. Boys of below average mental ability show lower stability.

3. Accuracy of self-concept varies in the different sex-ability groups depending on the outside measure used as a standard of accuracy.

3.1 Boys of superior tested mental ability show good agreement between self-concept of mental ability and test scores, i.e. they are accurate. They show less agreement with teacher ratings of mental ability, and little with peer nominations for mental ability.

3.2 Boys of average mental ability show no agreement between test scores and self-concepts of mental ability. However, there is good agreement in this group between teachers' judgments and self-concepts.

3.3 Girls of both ability groups show no agreement between self-concept and test scores. Correlations are moderate between self-concept on the one hand, and teacher and peer judgments on the other.

4. Height of self-concept is predicted by different variables in the four sex-ability groups.

4.1 Self-concepts of superior boys are best predicted by 1) attitudes toward school, 2) scores on creativity tests, 3) scores on mental ability tests.

Of little or no value in the prediction of self-concepts in these boys are the variables deriving from the perceptions of significant others in the child's classroom environment -- the teacher and the peers.

4.2 Self-concepts of the average boys in the sample are predicted by a quite different pattern of variables. Self-concepts are positively related to 1) task oriented work in the classroom, 2) liking by the teacher, and 3) ratings of motivation to gain affection from teacher and peers.

4.3 For the superior group of girls in this sample, the predictor variables resemble those for the superior boys, with the exception that test scores on mental ability correlate negatively, if anything, with self-concept. Furthermore, the mental ability self-concepts of these girls are lower than those of the superior boys, although the two groups do not differ in tested mental ability.

4.4 The average group of girls show self-concepts which are predicted by 1) attitudes toward school, 2) fluency measures of creativity and 3) fall measures on achievement test scores. Spring achievement test scores do not predict self-concept. In addition, favorable perceptions by teachers and peers are positively related to self-concept. In this they resemble the average boys, and differ from the two groups of children of superior mental ability.

5. Satisfaction with self -- an overall measure which does not involve comparison to the class group -- is predicted for all groups by 1) social relations of liking for other children and 2) favorable attitudes toward school.

6. Expected or felt improvement of self shows predictor variables which differ for the sex-ability groups. The two groups of superior children show positive relations between improvement and social relations, while this is not regularly the case with the average children. The same is true of the correlations between improvement and tested mental ability

-- generally positive in the superior groups and negative in the average groups.

7. These results have been interpreted in terms of the differential impact of the classroom situation on children with differing mental ability, the effect of anxiety about the self on the reported self-concept, and the increasing social interest, with concomitant conflict about achievement, of girls at the 5th-6th grade level studied here.

CHAPTER V. SOCIAL RELATIONS IN THE CLASSROOM*

Introduction

Since the age-grouping of children in our elementary school classrooms sets up a natural social situation among age-mates, the social relations obtaining between children, as well as those between children and teacher, intrude themselves as important forces into the classroom learning situation. There is not complete consensus of public opinion as to what extent the development of social skills is the function of the school, but evidence is accumulating that the sociometric status of the child affects his utilization of his academic abilities (Van Egmond, 1960; Schmuck, 1962) and his contributing to or disrupting the functioning of the class groups (Cunningham, 1951; Lippitt and Gold, 1959). That the behavior of the teacher can influence sociometric status has been experimentally verified by Flanders and Havumaki (1960).

The purpose of the present chapter is to extend these findings in two directions: (1) examination of other correlates of sociometric status in addition to academic utilization, and (2) investigation of the relationships between teacher and peer perceptions of children and the children's sociometric position. The sample population is the same as that previously described: seven fifth and sixth grade self-contained classrooms, seven teachers and 195 children. The child sample has been divided by sex and by Primary Mental Abilities composite test scores to form four sex-ability groups: (1) superior boys, who are above the mean of the total group (an I.Q. of approximately 115) on PMA; (2) average boys, below the mean; (3) superior girls; (4) average girls.

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*This chapter was written with the assistance of Helen V. Trickett.

The Social Relations Scores

The Social Distance Scale

The scale used was modified slightly from that reported by Cunningham (1951). Instructions were as follows:

> "We don't like all of our friends in the same way. Some we like more than others. There may be some people we don't like at all. It is a help to your teacher in planning work groups to understand your feelings. Beside each name listed, put a check in the space under the statement which most nearly describes your feelings about the person. When you come to your own name, check the space which describes how you think most of the boys and girls feel about you. Substitute "her" for "him" when checking a girl's name. This paper will be kpet in confidence."

The dittoed sheet, prepared separately for each class, contained names of all children in the class, arranged alphabetically without regard for sex. Ratings could be made in one of five spaces, labelled according to the following scheme. The code value was not on the children's sheets:

	Code value
Would like to have him as one of my best friends	9
Would like to have him in my group but not as a close friend	7
Would like to be with him once in a while but not often nor for a long time	5
I would rather not have anything to do with him	3
Dislike him	1

Liking for the same sex. This is the average score given by one child to all the others of his same sex in the classroom. Means for this score clustered around 6.6 in coded value.

Liking for the opposite sex. A similar score was computed for the child's liking for children of the opposite sex. Means for this score were slightly below 5.0.

Liking by the same sex. This is a measure of popularity or acceptance by classmates of the same sex. The score is computed by averaging the rating given one child by each of his classmates of the same sex. Means for the various sex-ability groups on this score ranged from 6.0 to 7.0.

Liking by the opposite sex. This is the average rating given the child by opposite-sexed classmates. Means for groups varied from 4.0 to 5.2.

Liking by the teacher. The teacher filled out the same blank as the children, rating all the children in the room for the degree of enjoyment he felt for them personally. Means for groups were somewhat higher for this scale than for the children's, ranging from 6.3 to 7.9. No teacher used the "Dislike him" column.

Administration

The social distance scale was given to the children twice during the research, once early in the fall and again late in the spring. Administration was done by the classroom teacher, who stressed the confidentiality of the results. The liking by the teacher scale was given to the teachers once only, in the late spring.

Mean differences, sex and ability groups

From Appendix tables B-1 and B-2, it is apparent that the superior boys and girls are better liked than the average boys and girls, both by their classmates and by the teacher. On the liking for others score, there is only one significant difference between group means: the average boys, in the spring, show more liking for the opposite sex than do the average girls.

There are a few changes from fall to spring: all groups are higher in liking for and by the same sex in the spring after having been together for the school year. And standard deviations are higher, in the spring, for both groups of girls on liking by the opposite sex, although the means are not higher. Evidently some girls move to a more favored position and some to a less popular one as far as the boys are concerned.

Stability

Stability coefficients, from fall to spring, are generally high for these scores, ranging from .40 to .82, with a single exception. Average boys show a fall-spring correlation of .26 on liking for the same sex.

Results

The main corpus of data results from a correlation matrix designed to test the extent to which certain child characteristics and perceptions of the child by others are predictive of his scores on the various social relations measures.

Intercorrelations between these various measures can be found on the tables to follow. Generally the liking for same sex and for opposite sex scores are significantly related in the fall but drop for boys in the spring. Liking by same and liking for same correlate rather weakly, but liking by same, by opposite, and by teacher are all strongly related positively.

The makeup of these tables is described on page 45. Some factor analyses have been done on the data and will be reported where relevant, but the main data analysis consists in examination of significant zero order correlations with the various target variables.

Liking for same sex (see Tables 10 and 11)

Superior boys. Boys of above average ability who report liking for many other boys in the class show some distinctive correlates of this liking (Table 10): apparent satisfaction with self, favorable attitudes toward school, considerable need achievement. They are decidedly socially oriented in their classroom work (low task-oriented behavior, high social work behavior) and tend to score low on achievement tests. Possibly these bright boys, liking many others, can achieve academically in an adequate fashion without much work or anxiety. Their real endeavor apparently goes towards social expression.

Liking for the same sex, in these superior boys, is associated with unfavorable ratings by the teacher on a number of characteristics (Table 11): if the boys tend to report liking for a large number of other boys, the teacher seems them as low in intrinsic interest, work habits and mental ability. Note that the classroom behavior observations confirm the teachers' impressions on work habits, i.e., there are strong negative relations with task oriented work. However,

Table 10 TARGET VARIABLE: SOCIAL RELATIONS - LIKING FOR SAME SEX

PREDICTOR VARIABLES ↓ (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall								
Happy qual.								
Overall mean								
" satisfact	.35*				.34*			
" improve	.35*		.21				.21	
Spring								
Happy qual.								
Overall mean								
" satisfact					.30*		.36*	
" improve					.29*		.37**a	-.07
2. Social relations - Fall								
Liking for same sex					.58**	.26	.47**	.49**
Liking for opp sex	.47**	.67**	.53**	.48**			.25	.35*
Spring								
Liking for same sex								
Liking for opp sex						.24 f	.36*	.33*
3. Classroom behav'r								
Fall								
Task oriented work	-.48**a, s	-.08	.20		-.30*s		.24	
Spring								
Task oriented work					-.16 f			
4. Achievement tests - Fall								
Total composite	-.18 s		.41**			-.25 s		.24
Reading "	-.27 s		.39**		-.32* s	-.28 s	.13	.19
Work study "	-.17 s		.41**			-.25 s		.33*
Arithmetic "			.24					
Spring								
Total composite						-.25 s		.27
Reading "					-.25			.23
Work study "					-.24	-.29* s		.22
Arithmetic "						-.27 s		.27
5. Attitudes - Fall								
Academic	.33*	.35*						
Intensive study	.25							
Overall mean	.27	.34*			.24			
Spring								
Academic					.29*		.27	
Intensive study								
Overall mean					.29*	.21		
6. Creativity - Winter								
Plot originality				.23			.21	
Things fluency			.28* a	-.17				.23
Things unusual			.31* a	-.18				
Object synthesis			.38**					
7. Primary mental abils. - Winter								
Total composite			.33* a	-.24		-.36* s		.10
Verbal		-.30*				-.35*		
Space	.25	.21 s	.19 a	-.38**				
Reasoning			.26					.23
Number	.21				.24 a	-.23		
8. Motives from TAT - Winter								
Need achievement					.33* a	-.08	.25	
Need affiliation		-.21 s	.24	.27	.21			.24
Need power				.24				

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Table 11 TARGET VARIABLE: SOCIAL RELATIONS - LIKING FOR SAME SEX

PREDICTOR VARIABLES ↓ of (perceptions/others)	Fall scores Superior boys	Average boys	Superior girls	Average girls	Spring scores Superior boys	Average boys	Superior girls	Averag girls
1. Teacher ratings -	Fall							
Attractive appear			.27			-.13 s		.34*
Physical ability	.12 a	-.29				-.19 s		.27
Work habits			.21			-.11 s		.38
Social virtues			.23					
Happy qualities			.22		-.10 s		.34*	.21
Creativity			.26				.23	
Intrinsic interest	-.24 s	-.22 s	.24	.21	-.24 s	-.07 s	.19	.43**
Seek status: acad		-.24						.25
Seek status: social		-.21				-.21		
Gain affect: peers						.22	.21	
Gain affect: teach							.26	
Spring								
Attractive appear								.23
Physical ability						-.22 s	.36*	.25
Work habits					-.31*	-.32*s		.37**
Social virtues						-.07 s		.38**
Happy qualities							.28	
Creativity							.29*	
Intrinsic interest					-.23 s	-.26 s	.28*	.30*
Mental ability (winter)					-.31*	-.33*s		.32*
Seek stat: acad					-.23 s	-.18 s	.19	.32*
Seek stat: social					.25			
Gain affect: peers							.23	.21
Gain affect: teach								
2. Teacher social dis. -Spring								
Teacher liking for child							.21	.21
3. Peer nominations Fall								
Attractive appear		-.26			.24 a	-.24 s		.29*
Physical ability								.28*
Work habits		-.28				-.25 s	-.01 a	.40**
Soc. relations teach		-.22						.23
Mental ability	-.14	-.37* s		.14	.01 a	-.47**s		.35*
Social virtues	.09 a	-.33*s		.15		-.18 s		.30*
Spring								
Attractive appear					.22			.22
Physical ability					.21		.24	.23
Work habits						-.28 s	.23	.27
Soc. relations teach								
Mental ability					.11 a	-.35*s		.25
Social virtues					.21			
4. Social distance Fall								
Liking by same sex	.25		.39**			-.21 s	.37**	.23
Liking by opp sex			.25					
Spring								
Liking by same sex							.33*	.23
Liking by opp sex					-.20 s	-.20	.33*	

See code on page 45.

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objectively measured mental ability (PMA) is positively related (but low) to liking for boys--the teacher must be inferring lower mental ability from the boys' achievement and poor work behavior rather than from ability test scores.

Peers' ratings of these superior boys are low positive with liking for other boys--but all insignificant.

Average boys. For the group of boys below the class mean in mental ability, a high degree of liking for other boys is associated positively with favorable attitudes toward school (Table 10). Otherwise the predictors are all negative: achievement and ability test scores are lower the more the boy indicates liking other boys, while teacher and peer perceptions (Table 11) show negative relations between desirable characteristics (particularly those connected with academic achievement) and liking for other boys. Self-concept is unrelated in this group to liking, and need achievement is also unrelated.

The predictors of liking for the same sex in the two groups of boys are thus in agreement on showing poor achievement and unfavorable ratings by the teacher for those who indicate a high degree of liking for other boys. In both groups, attitudes toward school are positive with liking for others; if they like school, they like other boys. Possibly sociability is chiefly what school means to the boys who score high on liking for others. The difference in predictors between the groups appears in self-concept scores: the bright boys with good self-concepts tend to like others but in the average group self-concepts are unrelated to liking. One is tempted to speculate that if one is bright, it may be supportive to the ego to be a sociable playboy; for the less bright, ego support cannot well derive from this source alone.

Superior girls. Sociable behavior and attitudes are expected of the well-adjusted school girl in middle class culture (Kagan, 1963). It was therefore predicted that girls in general would show more positive relationships than boys with expressed liking *for* the same sex. This is amply demonstrated by Tables 10 and 11. The number of significant relationships (.05 level or better) between predictor variables and the target variable of liking *for* the same sex were as follows for the four sex-ability groups:

Table 12. Number of significant r's predicting liking *for* same sex; by sex-ability groups

	BOYS				GIRLS			
	Superior		Average		Superior		Average	
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
No. positive r's (.05 or better)	4	0	3	0	9	11	1	16
No. negative r's	1	5	3	7	0	0	1	0

Sex differences in number of significant predictors are most pronounced in the spring, when neither group of boys shows any positive relationship between liking *for* for the same sex and the predictor variables. Both groups of girls give a substantial number of positive correlations and a single negative one.

Positive predictors of *liking for other girls*, in the *superior* group of girls, occur in the following areas:

Self-concept satisfaction and improvement
Social relations: liking _for_ opposite sex
Achievement tests (Fall only)
Creativity tests (Fall only)
Primary mental abilities (Fall only)
Social distance: liking _by_ others
Teacher perceptions

The bright girl who likes other girls, then, tends to have good self-esteem, likes boys as well as girls, is popular with both sexes and is well-regarded by the teacher (who tends to view unfavorably the bright boys who have high scores on liking _for_ their own sex). In the fall of the year, the various test scores enter in also as positive predictors for the bright girls. In this respect also there are sex differences: bright boys who like other boys tend to do relatively poorly on tests.

Average girls. Predictors of liking _for_ other girls are similar to those for the superior girls with several significant exceptions. Creativity and ability test scores are generally negatively correlated with liking _for_ other girls, self-concept is unrelated, while both teacher ratings and peer nominations are regularly and significantly positive in association with liking _for_ other girls. Of these, the peer nomination for work habits produces the largest positive _r_, and this differs significantly from that for the superior girls. The average girls who are seen by their peers as good workers show positive acceptance for other girls.

Summary. Prediction of the degree of liking _for_ other children of the same sex proves to vary from one sex-ability group to another, with sex differences being especially prominent. Bright boys tend to report much liking for other boys in association with positive self-esteem and attitudes, together with low frequency of task-oriented work and poor scores on achievement tests; apparently a play boy syndrome. Teachers perceive these high-liking boys unfavorably.

There are similar predictors for liking other boys in the group comprising boys of average mental ability, with the exception that self-concept is not a positive part of the picture.

Both girls' groups show positive relationships between the girl's liking for other girls and favorable perceptions of the girl by teacher and peers, particularly in the spring after the class has been together for the school year. Girls who are high-scoring on liking for other girls tend to do well on achievement tests. Evidently, then, in girls at this age and in this sample, high-liking is not a rejection of the academic part of school life, whereas in boys it appears to be. In girls liking for other girls and academic achievement are associated.

Liking for opposite sex (see Table 13)

Superior boys. Liking for girls, in the bright boys' group, carries much the same set of correlates as liking for boys; in fact, the two scores (liking for same and for opposite) correlate .47 in the fall, though lower in the spring. The differences in predictors lie in the classroom behavior categories: the boy who describes himself as liking the girls moves from low task-oriented work in the fall to high frequencies of this behavior in the spring. From Table 13 it is

Table 13 TARGET VARIABLE: SOCIAL RELATIONS - LIKING FOR OPPOSITE SEX

PREDICTOR VARIABLES ↓ (Child variables)	Fall scores Superior boys	Average boys	Superior girls	Average girls	Spring scores Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall								
Happy qual.			.31*					.20
Overall mean			.27			.21		.30*
" satisfact	.30*	.23	.25		.27	.27	.23	.22
" improve								
Spring								
Happy qual.						.23	.22	
Overall mean						.34*	.23	
" satisfact					.25	.37**	.27	.22
" improve						.27	.24	
2. Social relations - Fall								
Liking for same sex	.47**	.67**	.53**	.48**	.41**	.50**	.37**	
Liking for opp sex					.61**	.75**	.59**	.40**
Spring								
Liking for same sex						.24	.36*	.33*
Liking for opp sex								
3. Classroom behav'r								
Fall								
Task oriented work	-.21		-.11	.01			.25	
Spring								
Task oriented work					.31* f		.36* f	.42**f
4. Achievement tests								
Fall								
Total composite	-.23				-.20	-.19 s	-.14 a	.33*
Reading "			.24		-.22	-.15 s		.36*
Work study "						-.28 s	-.17 a	.31*
Arithmetic "							-.20	
Spring								
Total composite						-.23		
Reading "								
Work study "						-.20		
Arithmetic "						-.24		
5. Attitudes - Fall								
Academic		.46**	.44**		.09 s	.46**	.51**a	.07
Intensive study		.22	.43**			.29*	.36*	
Overall mean		.43**	.26			.35*s	.38**a	-.17
Spring								
Academic					.21	.35*	.27	
Intensive study						.27		
Overall mean					.24	.40**		
6. Creativity - Winter								
Plot originality			.28*			.21	.34*	.35*
Things fluency	-.23 s	-.30*	.43**a	-.11			.31*	
Things unusual	-.25 s	-.25	.42**a	-.10			.32*	
Object synthesis			.40**a	-.01			.30*	.20
7. Primary mental abils. - Winter								
Total composite		-.21				-.35* s		.25
Verbal		-.37*				-.44**s		.12
Space	.38**s		-.15					.23
Reasoning		-.22				-.32*s		.10
Number	-.25 s		.20					
8. Motives from TAT - Winter								
Need achievement								-.23
Need affiliation			.25	.23				.29*
Need power				.26				

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also seen that both groups of girls make a similar change, so that the mutual cross-sex liking appears (in the spring) in children of both sexes who are using the classroom more for quiet work than for play or obvious sociability. However, the bright boys who follow this pattern do not do any better on achievement test; the work apparently does not pay off in tested performance.

Average boys. Liking for girls, in the group of boys below the mean in mental ability, is associated with strongly positive attitudes toward school and good spring self-concepts. Negative predictors are mental ability, achievement, and creativity test scores. Among this group, then, the less able and creative boys show the most liking for girls, and along with this they show expressed self-esteem which reaches highly significant levels as shown in Table 13. Not on the table, but especially interesting in this connection are spring r's of two self-concept scores with liking for the opposite sex: self-concept social relations opposite sex, + .54**, and self-concept mental ability, + .33*. The latter correlation is patently a defensive reaction, since the correlation between liking for opposite sex and PMA tested ability, even within the restricted range of these lower ability boys, is significantly negative (-.35*).

Superior girls. Liking for the opposite sex, in the bright girls' group, is associated positively with a number of characteristics: attitudes, creativity tests, and task-oriented behavior. The latter does not result in better achievement; like the bright boys, these high-scoring girls' work behavior does not produce noticeable results in achievement.

Average girls. Quite a different pattern appears in the correlates of liking *for* boys in the average ability girls. Here the task-oriented work is again a positive predcitor, but in the case of this group, achievement test scores show positive relationships as well. There are small positive relations with mental ability which provide strongly significant differences in correlations from the average boys' group, which is the same in mental ability but shows negative relations between liking *for* the opposite sex and ability.

Summary. Liking *for* the *opposite sex* in children of this age is associated with high frequency of task-oriented behavior, but not high achievement, in both boys and girls of superior mental ability. Bright girls who are high on liking the boys tend also to be creative, in which they differ from all other groups. Average girls who like boys do well on achievement tests, also unlike all the other groups. And they are also favorably regarded by peers (not shown on table), which is not the case for the other groups high in cross-sexed liking. Average boys high in liking girls are poor in ability and achievement but surprisingly high in self-esteem. It is suggested that for boys, who have not the talent to achieve respect for their achievement, gay friendship with girls may provide support in the classroom social environment.*

Liking by the same sex (see Table 14 and 15)

Superior boys. Popularity, or high ratings *by* other boys, is

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*Teachers rate average boys who like the girls as *high* in happy qualities.

able 14 TARGET VARIABLE: SOCIAL RELATIONS - LIKING BY SAME SEX

REDICTOR ↓ ARIABLES ↓ Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
. Self-concepts								
all								
Happy qualities	-.21							
Overall mean			.24					
" satisfact.	.20							
" improve.					.20			
pring								
Happy qualities								
Overall mean								
" satisfact.					.34*			
" improve.								.24
. Social relations - Fall								
Liking for same sex	.25		.39**		.26 a	-.27	.29*	
Liking for opp. sex			.34*	.21		-.34* s		.27
pring								
Liking for same sex							.33*	.23
Liking for opp. sex					.27 a	-.18 s		.23
. Classroom behavior								
all								
Task oriented work	.35*	.30*	.23	.30*			.38**	
pring								
Task oriented work					.31*			.24
. Achievement tests - Fall								
Total composite		.27	.24	.39**			.24	.31*
Reading "		.29*	.27	.30*			.29*	.25
Work study "		.21	.32*	.48**			.29*	.42**
Arithmetic "		.25		.23				
pring								
Total composite					.23	.04 f	.33*	.29*
Reading "						-.09 f	.37**	.25
Work study "					.31*		.24	.33*
Arithmetic "					.21		.25	.21
. Attitudes - Fall								
Academic							-.20 a	.25
Intensive study								
Overall mean						.26		
pring								
Academic								.24
Intensive study								
Overall mean								
. Creativity - Winter								
Plot originality	-.21							
Things fluency	.24							
Things unusual								
Object synthesis		.22			.20			
. Primary mental abils. - Winter								
Total composite				.27	.23			
Verbal		.21		.29*				
Space								
Reasoning			-.03 a	.39**	.21			.29*
Number	.21				.29 s		-.22	
. Motives from TAT - Winter								
Need achievement	.22				.24			
Need affiliation								
Need power							.23	

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Table 15 TARGET VARIABLE: SOCIAL RELATIONS - LIKING BY SAME SEX

PREDICTOR VARIABLES of (perceptions/others)	Fall scores Superior boys	Fall scores Average boys	Fall scores Superior girls	Fall scores Average girls	Spring scores Superior boys	Spring scores Average boys	Spring scores Superior girls	Spring scores Average girls
1. Teacher ratings - Fall								
Attractive appear.	.30*	.44**	.54**	.40**	.31*		.52**	.28*
Physical ability	.35*	.57**s	.51**	.17	.41**	.32*	.45**	
Work habits		.41**	.35*	.35*	.35*	.28*	.33*	.32*
Social virtues	.56**	.47**	.65**	.46**	.53**	.30*	.52**	.52**
Happy qualities	.40**s	.32*	.67**a	.11	.33*	.23	.59**a	.21
Creativity			.41**				.33*	
Intrinsic interest	.15 s	.40**	.64**a	.17	.22 s	.22	.67**a	.19
Seek status: acad.		.32*						
Seek status: social	-.14 a	.33*						
Gain affect: peers		.24		.20				
Gain affect: teach.								
Spring								
Attractive appear.						.24	.42**	.26
Physical ability					.48**	.25 f	.48**	
Work habits					.35*	.39**	.43**	.43**
Social virtues					.49**	.39**	.69**	.46**
Happy qualities					.52**	.27	.61**	.39**
Creativity					.20		.44**	
Intrinsic interest					.31*	.28	.57**	.53**f
Mental ability (winter)							.38**	.45**
Seek stat: acad.					.32*	.20		.23
Seek stat: social					.23 f			
Gain affect: peers					.31*	.28	.27	.29*
Gain affect: teach.					-.19 a	.38**		
2. Teacher social distance - Spring								
Teacher liking for child					.49**	.37*	.60**	.51**
3. Peer nominations								
Fall								
Attractive appear.	.32*	.53**	.53**	.59**	.38**	.48**	.47**	.53**
Physical ability	.45**		.41**	.25	.36**a	-.15 s	.45**	.31*
Work habits	.42**	.49**	.33*	.37*	.41**	.23	.22	.36*
Soc.relations teach.	.58**	.48**	.41**	.32*	.46**	.21	.44**	.33*
Mental ability	.46**	.61**s	.39**	.31*	.39*	.43**	.23	.37**
Social virtues	.47**	.47**	.43**	.37**	.52**	.41**	.46**	.39**
Spring								
Attractive appear.					.36*	.49**	.61**	.58**
Physical ability					.45**	.29*	.46**	.38**
Work habits					.43**	.57**	.46**	.52**
Soc.relations teach.					.52**	.35*	.55**	.31*
Mental ability					.37*	.51**	.35*	.32*
Social virtues					.65**	.47**	.47**	.45**
4. Social distance								
Fall								
Liking by same sex					.67**	.47**s	.82**	.74**
Liking by opp.sex	.57**	.53**	.51**	.33*	.54**	.37*	.39**	.36*
Spring								
Liking by same sex								
Liking by opp.sex					.50**	.46**	.31*	.38**

See code page 45.

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associated in the boys of above average mental ability with high levels of classroom work (Table 14). Thus while boys who report much liking for other boys devote more time to sociability than to task-oriented work, those who are popular with other boys do work a large proportion of the time. By spring, achievement test scores also predict popularity.

Turning to prediction of popularity by perceptions of teacher and peers on other attributes of the child, as shown in Table 15, there are, as expected, strong positive relations between liking by the other boys and all sorts of desirable characteristics rated by teacher and peers. This is true of all sex-ability groups: there is nearly a complete halo effect in the correlations between liking by others on the one hand, and teacher ratings and peer nominations for favorable qualities. There are a few exceptions worth mentioning. The teachers' favorable perception of the superior ability boys rated high in popularity by other boys does not extend to favorable judgments of their creativity, nor to their motivation to gain affection from the teacher, both of which are insignificantly related to the boys' popularity. But, as the table shows, the bright boy, who is judged to have good physical ability, social virtues, happy qualities, and the like, is likely to be the popular boy. Teacher and peers agree well on their degree of liking and disliking, and the strong interrelations between favorable characteristics reinforces the large body of literature showing the generality of popularity, and the lack of discrimination in judgments of diverse characteristics where liking is involved.

Average boys. What characteristics predict popularity with other boys in this group? Table 14 shows fall positive correlations between liking *by* other boys and two predictors: task oriented work and achievement test scores. In the spring columns, however, these positive predictors have dropped out. Perhaps the boy of average ability cannot maintain popularity through his work behavior, as seemed the case in the fall. Further, he is not liked if he shows much liking *for* others, either boys or girls, which are positive predictors for the superior boys. Table 14 simply does not show the road to popularity for the average boy, if there is indeed one road typically followed.

Some clues are offered by Table 15, particularly for fall predictors. If teachers see these boys as high in physical ability, intrinsic interest, and motivation for seeking status and gaining affection, the boys tend to be well liked. There is a curious spring *negative* relation between popularity and peer nomination for physical ability which does not support the foregoing analysis. Possibly it is an artifact of the sample.

Superior girls, average girls. The two girls' groups differ very little in predictors of popularity. Liking *for* other children is positively predictive, as is task-oriented behavior, and good achievement. Teachers perceive the popular girls as attractive, enthusiastic, and the peers reinforce this view.

Summary. Popularity, or liking *by* the same sex, is well predicted for three of the four children's groups by the child characteristics of industrious classroom work, good scores on achievement tests, friendly attitudes toward other children, and favorable perceptions by teacher and peers on a number of characteristics. The exception is the group of average ability boys, for whom prediction of popularity from these characteristics can only be made in the fall. Spring results on these boys are puzzling. Possibly there is no accepted group road toward popularity with other boys for those of lower mental ability.*

Liking by the opposite sex (see Tables 16 and 17)

Superior boys. Within the superior boys' group, what are predictors of how well the boy will be liked by the girls of the class? From Table 16 there are several interesting findings. The main significant predictors appear in the spring of the year, and they involve the boys' own liking for girls, and less liking for other boys. The boys apparently are catalogued by the girls on the extent to which

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*Since each of the four children's groups represent only half the distribution of mental ability scores, the PMA variable does not generally produce significant correlations. The following r's for the total boys' and total girls' groups agree well with the literature (Dentler and Mackler, 1962), in showing generally significant positive relations between mental ability and liking by others.

	ALL BOYS N = 95		ALL GIRLS N = 100	
	Fall	Spring	Fall	Spring
PMA Composite X				
Liking by same sex	.27**	.32**	.21*	.13
Liking by opposite sex	.29**	.36**	.18	.26**
Liking by teacher	X	.30**	X	.30**

Table 16

TARGET VARIABLE: SOCIAL RELATIONS - LIKING BY OPPOSITE SEX

PREDICTOR VARIABLES ↓ (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall								
Happy qualities			.24					.23
Overall mean		.22	.25	.22			.23	.24
" satisfact.			.26	.25				
" improve.	.27			-.23	.28	.24 s		-.19
Spring - Happy qualities								
Overall mean							.22	
" satisfact.					.32*			
" improve.								
2. Social relations - Fall								
Liking for same sex	.17		.25				.37*a	-.12
Liking for opp. sex	.17		.53**	.26	.29		.54**a	.06
Spring								
Liking for same sex					-.20 s,f	-.20	.33*	
Liking for opp. sex					.62**a,f	.25 s	.66**	.68**f
3. Classroom behavior								
Fall								
Task-oriented work			.30*	.33*			.40**	.37**
Spring								
Task-oriented work					.31*	.44**	.39**	.65**
4. Achievement tests - Fall								
Total composite		.29*		.27				.28*
Reading "		.28*		.35*				.42**
Work study"		.22		.26				.29*
Arithmetic"		.30*						
Spring								
Total composite								
Reading "						-.01 f		
Work study "								
Arithmetic "						.05 f		
5. Attitudes - Fall								
Academic			.41**		-.00 s	.20	.53**a	.11
Intensive study			.40**		-.05 s		.47**	
Overall mean		.22	.31*		-.06 s	.31*	.41**a	-.09
Spring								
Academic						.24	.29*	.32*
Intensive study						.23	.32*	.30*
Overall mean							.22	
6. Creativity - Winter								
Plot originality	-.07 a	.37*	.29*			.29*	.21	.25
Things fluency	.25							
Things unusual								
Object synthesis	.31*a	-.11	.25					
7. Primary mental abilities - Winter								
Total composite				.28*		-.10 s		.32*
Verbal	-.20			.30*	-.23			.21
Space					.23 a	-.20 s		.24
Reasoning	.26							
Number	.23							
8. Motives from TAT - Winter								
Need achievement		.17 s		-.34*			.10 a	-.32*
Need affiliation				.28*				.27
Need power								

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Table 17 TARGET VARIABLE: SOCIAL RELATIONS - LIKING BY OPPOSITE SEX

PREDICTOR ↓ VARIABLES of (perceptions/others)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings - Fall								
Attractive appear	.50**	.34*	.32*		.41**	.33*	.20	.36**
Physical ability	.20	.38**		.24		.39**		.31*
Work habits		.42**	.25	.34*		.41**		.36*
Social virtues	.46**	.50**	.56**	.35*	.53**	.50**	.38**	.30*
Happy qualities	.29 *	.24	.38**		.45**	.25	.26	
Creativity				.34*				
Intrinsic interest		.39**	.39**	.33*		.39**	.23	.20
Seek status: acad.		.40**		.25		.44**		
Seek status: social					-.27a	.22		
Gain affect: peers	-.10							
Gain affect: teach					-.23 a,s	.23	.26	
Spring								
Attractive appear					.25	.28		.35*
Physical ability					.37*	.21		
Work habits					.40**	.53**		.26
Social virtues					.69**f	.53**	.23	.33*
Happy qualities					.50**	.41**	.26	
Creativity						.20		.35*
Intrinsic interest					.28	.42**	.28	.38**
Mental ability (winter)						.30*		.28*
Seek status: acad.						.36*		
Seek status: social								.25
Gain affect: peers					.33* f	.35*		
Gain affect: teach					-.19 a	.25		
2. Teacher Social Distance - Spring								
Teacher liking for child					.41**	.41**	.33*	.37**
3. Peer Nominations - Fall								
Attractive appear	.33*	.48**	.41**	.41**	.46**	.43**		.39**
Physical ability	.20				.25			
Work habits	.33*	.41**	.27	.33*		.31*		.35*
Soc.relat.teach.	.32*	.31*	.40**	.32*	.27	.30*	.21	.24
Mental ability	.30*	.45**	.30*	.29*		.45**		.31*
Social virtues	.38**	.42**	.44**	.25	.37*	.41**	.27	.22
Spring								
Attractive appear					.48**	.51**	.26	.47**
Physical ability					.27	.28		.27
Work habits						.48**	.37*	.33*
Soc.relat.teach.					.31*	.41**	.25	
Mental ability					-.03 a	.47**		.34*
Social virtues					.57**	.44**	.19 f	.37**
4. Social relations - Fall								
Liking by same sex	.57**	.53**	.51**	.33*	.51**	.53**	.38**	.35*
Liking by opposite sex					.67**	.73**	.81**	.81**
Spring								
Liking by same sex					.50**	.46**	.31*	.38**
Liking by opposite sex								

See code page 45.

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they are ladies' men, and the girls, not unnaturally, like those best who show some liking for them. Boys' attitudes toward school achievement, and also their mental ability, are unrelated to liking *by* the girls. And, as shown in Table 17, the strongest predictors of whether a boy will be liked by the girls are his appearance (attractive) and his social virtues behaviors, involving consideration for and understanding of others.

Average boys. These boys show similar predictors of liking *by* the girls, but additionally, favorable attitudes toward school and originality of thinking are positively associated. Motivation to seek status and affection are also predictors of liking *by* girls. If these average ability boys are perceived (teacher rating, peer nomination) as having good mental ability, girls tend to like them.

Superior girls, average girls. Positive predictors of liking *by* the boys in the classrooms, for both groups of girls, are liking *for* the boys (very strong in spring), high task-oriented work, favorable attitudes toward school. There are two provocative differences between the girls' groups: (1) average ability girls who are liked *by* the boys have *low* need achievement while for the superior girls there is essentially no relation; and (2) teachers and peers tend to perceive the average girl favorably in association with liking *for* the girl by the opposite sex, but for the superior girl this general halo is much less strong in the spring. Table 18* shows the number of significant r's produced in relation to liking *by* the same and opposite sexes. In both fall and spring, superior girls (like all the groups) show a large number of significant relationships in relation to how well they are liked *by* other *girls*. In relation to being liked *by* boys, in the spring there are only six significant correlations for the superior girls out of 39 possible (or 15 per cent), as compared to 21 out of 39 (54 per cent) for the average girls.

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*Derived from Tables 15 and 17.

Table 18. Number of r's significant at .05 or better; teacher and peer perceptions x liking by same and by opposite sex.

	Liking by same sex				Liking by opposite sex			
	Superior Boys	Average Boys	Superior Girls	Average Girls	Superior Boys	Average Boys	Superior Girls	Average Girls
No. significant r's								
Teacher and peer perceptions								
Fall (of 18 possible)	11	14	14	9	9	12	9	9
Spring (of 39 possible)	28	19	29	25	17	26	6	21

There are a couple of clues to this odd finding. We have previously pointed out that the teachers' and peers' perceptions of a child's *social virtues* (consideration for and understanding of others) provide a sensitive predictor of a number of other aspects of the child's social stimulus value at this age. Social virtues (both teacher rating and peer nomination) is generally highly correlated with both liking by same and by opposite sex in all groups, both spring and fall. For the superior girls, however, the correlation with liking by opposite sex drops below significant levels in the spring, while remaining up for the average girls. Possibly the factor of social virtues becomes of less relevance in liking by boys for the superior girls; for average girls these social virtues, and low need achievement, which may be associated with a quieter, more passive approach, remain good predictors. The differences here reported are not significant, and are clearly in need of testing by replication. They are presented because they are interestingly contrary to other trends found in the data.*

Summary. The extent to which classmates of the opposite sex will indicate liking for these 5th and 6th grade children is predicted by somewhat different characteristics in the fall and in the spring of the school year. Generally speaking, classmates like those of opposite sex who are highly engaged in the ongoing activity of the class. Here the "work" syndrome appears to enhance attractiveness. Also generally, if children indicate that they themselves like children of the opposite sex, then the latter group tends to reciprocate by indicating liking for them. At these ages, precarious cross-sexed liking, no doubt, needs some mutuality for its support. Both of these characteristics predict spring liking better than fall liking.

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*No claim is made for significance in the following bit of data but the reader may wish to know that of the seven teachers making the ratings, five were men.

Plot originality and favorable attitudes toward school predict liking by opposite sex in most groups.

Scores on achievement tests are positive predictors for the average (but not superior) boys and girls in the fall. By spring these scores bear no relation to liking by the opposite sex.

Generally, as found in relation to other targets, teachers and peers hold favorable regard on a number of dimensions for those popular with opposite sexed children. With certain exceptions mentioned above, the best predictors among the teacher and peer perceptions appear to be the child's attractiveness of appearance and his social virtues.

Liking by the teacher (see Tables 19 and 20)

Superior boys, average boys. Already mentioned has been the fact that group means show higher teacher liking for the superior boys (and also girls) as compared to the average children of both sexes. Table 19 presents correlations of the predictor variables with the target variable of teacher liking. For the superior boys, the best predictors of whether the teacher will like them are: (1) their self-report of thinking they will improve over the year, (2) their liking for other children, and (3) their low affiliative needs.

One correlation which appears in Table 19 should be mentioned here even though it is not highly significant. It occurs for the superior boys in the fall, between the variables of happy qualities and teacher social distance. The relationship is a negative one. At first glance

Table 19 TARGET VARIABLE: SOCIAL RELATIONS - LIKING BY THE TEACHER

PREDICTOR VARIABLES ↓ (Child variables)	Spring scores Superior boys	 Average boys	 Superior girls	 Average girls
1. Self-concepts				
Fall				
Happy qualities	-.24 a	.41**		
Overall mean				
Overall satisfaction				
Overall improvement	..31*s	.26	-.14	
Spring				
Happy qualities		.30*	.25	
Overall mean		.29*	.23	
Overall satisfaction		.26		
Overall improvement		.29*		
2. Social relations				
Fall				
Liking for same sex	.37* a	-.09	.41**	
Liking for opposite sex			.37*	.27
Spring				
Liking for same sex			.21	.21
Liking for opposite sex	.30*			.37*
3. Classroom behavior				
Fall				
Task oriented work		.26		.39**
Spring				
Task oriented work	.21 s	.23	-.21 a	.20
4. Achievement tests				
Fall				
Total composite			.33*	.40**
Reading composite		.33*	.31*	.32*
Work study composite			.26	.39**
Arithmetic composite			.27	.27
Spring				
Total composite		.20	.39**	.39**
Reading composite			.41**	.32*
Work study composite		.28*	.36*	.46**
Arithmetic composite			.28	.31*
5. Attitudes				
Fall				
Academic				.26
Intensive study				
Overall mean				
Spring				
Academic				
Intensive study				
Overall mean				
6. Creativity				
Winter				
Plot originality				
Things fluency				
Things unusual				
Object synthesis	.28		.32*	
7. Primary mental abilities - Winter				
Total composite				.24
Verbal		.23		
Space	.13 a	-.34*		
Reasoning				
Number				.21
8. Motives from TAT - Winter				
Need achievement				.25
Need affiliation	-.29*a	.43** s		-.02
Need power				

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Table 20 TARGET VARIABLE: SOCIAL RELATIONS - LIKING BY THE TEACHER

PREDICTOR VARIABLES (perceptions of others)	Spring scores Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings				
Fall				
Attractive appearance	.31*	.45*	.42**	.37**
Physical ability	.24	.50**	.23	
Work habits	.15 a	.56**		.48**
Social virtues	.62**	.67**	.46**	.47**
Happy qualities	.47**	.51**	.46**	.22
Creativity			.39**	.22
Intrinsic interest		.49**	.41**	.49**
Seek status: academic		.43**		.25
Seek status: social	-.09 a	.36*		
Gain affection: peers		.27		
Gain affection: teacher		.27		
Spring				
Attractive appearance	.02 a	.49**	.34*	.38**
Physical ability	.22	.46**	.31*	.33*
Work habits	.34*	.62**	.44**	.62**
Social virtues	.55**	.54**	.44**	.63**
Happy qualities	.59**	.62**	.47**	.56**
Creativity	.35*		.33*	.29*
Intrinsic interest	.27	.59**	.51**	.61**
Mental ability (winter)		.46**	.39**	.54**
Seek status: academic		.45**		.37**
Seek status: social				.21
Gain affection: peers	.26	.41**	.33*	.23
Gain affection: teacher	.03 a	.53**		.27
2. Teacher social distance				
Spring				
Teacher liking for child				
3. Peer nominations				
Fall				
Attractive appearance	.27	.47**	.41**	.35*
Physical ability	.32*			.34*
Work habits		.48**		.29*
Social relations with teach	.38**	.27	.29*	.26
Mental ability		.51**		.35*
Social virtues	.31*	.26	.41**	
Spring				
Attractive appearance	.33*	.54**	.41**	.38**
Physical ability	.27	.42**	.27	.31*
Work habits	.13 a	.55**	.42**	.52**
Social relations with teach	.37*	.43**	.51**	.35*
Mental ability		.50**	.33*	.39**
Social virtues	.43**		.36*	.40**
4. Social distance				
Fall				
Liking by same sex	.52**	.42**	.67**	.51**
Liking by opposite sex	.35*	.27	.49**	.43**
Spring				
Liking by same sex	.49**	.37*	.60**	.51**
Liking by opposite sex	.41**	.41**	.33*	.37**

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this seems strange. The superior boys have a higher (though not significantly) mean self-rating on happy qualities than the other groups of children. Earlier it was stated that the teacher likes the superior boys significantly better than the average boys, and yet, this relationship is negative! What are the conditions which might produce such a relationship? A possible explanation is that the teacher is especially empathic with superior boys who have a low self-concept of their happy qualities. This would produce a negative correlation. A similar relationship holds between teacher liking and superior boys' fall and spring self-concept of school subjects (not on table). The correlations are -.30 for fall and -.37 for spring respectively, significant at the 5 per cent level. One explanation could be that the teacher is impressed with the modesty of the boys or he may feel it is a challenge to raise the confidence of these boys. He may like them for making possible such an opportunity.

To be noted is the different pattern of correlations for the average boys. Here a strong positive predictor of liking by the teacher is the boy's own self-concept of his happy qualities. Need affiliation is also related positively to teacher liking. Possibly these average (below the class mean in tested ability) boys who are optimistic about their sociability, accomplishments, and capacity for improvement, gain the respect and affection of the teacher. In turn, the teacher's confidence in these boys may raise their own self-esteem.*

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*Means on self-concept measures for the average boys' group rise significantly from fall to spring, whereas means for the superior boys do not change.

Teachers tend to like the superior boys who like other children. Again there is a contrast in the relationships found for the average boys, where small negative correlations appear between liking _for_ other children and liking _by_ the teacher. Teachers may be able to acknowledge and favor developing sociability in the bright boys, but feel it to be a deterrent to scholarship in the boy of average ability. Interestingly no such distinction appears in the girls' group. Here teachers tend to like the girls who indicate liking _for_ others. The two groups of girls are not differentiated in these relationships.

How about the children's task-oriented behavior, achievement on subject matter tests, attitudes toward school activities and creativity test scores? None of these prove to be predictors of the degree to which the teacher will like the superior boy. For the average boys there are some positive _r_'s between teacher liking and achievement scores. And the negative relation in the bright boys group with teacher liking and need for affiliation contrasts with the strongly positive correlation for the average boys. One supposes that teachers prefer the boys with superior ability to be self-sufficient and independent of strong needs for affiliation, whereas, for the average boys, a high need affiliation may promote a kind of dependency on the teacher which facilitates help from teacher to student.

This interpretation is supported by the correlations involving teacher ratings of motivation to gain affection from the teacher (Table 20). For the superior boys, the _r_ with teacher liking is essentially zero, but it is strongly significant for the average boys.

Teachers may prefer the boys of average ability to be oriented toward the teacher in order that teacher-guidance may be more effective, since it is perceived as more needed than for the superior boys.

In other respects, Table 20 shows, as expected, a number of significant relations between liking by the teacher and the perceptions of both the superior and average boys by teachers and peers. The exceptions to this are in a way the most interesting. The superior boy's work habits are generally unrelated to the extent of teacher liking for him, while for the boy of average ability, work habits are a strong predictor of liking. Otherwise, the correlations for the two groups of boys are very similar in their prediction of liking by the teacher.

Superior girls, average girls. For both groups of girls, scores on achievement tests, both fall and spring, are significantly related to liking by the teacher. This contrasts with the boys' groups, in which achievement was a weak and spotty predictor. As has been mentioned, the two groups of girls also show some positive relations between liking for other children and liking by the teacher. For girls and for superior boys, evidently, friendly sociability with other children is welcomed by the teacher.

The two groups of girls differ in the correlations with task-oriented behavior: for the superior girl the r is negative with teacher liking and for the average girl positive. Neither correlation is large, but there is a significant difference between ability groups. Teachers may feel the average girls need to devote themselves to work, and tend to like those who do. Supporting this interpretation are the correlations from teacher and peer perceptions of work habits: these are strongly positive for the average girls (as for the average boys) with teacher liking, and generally less significant for the boys and girls of superior ability.

Summary. The composite picture of the characteristics of children who are liked by the teacher suggests something of the teacher's motivation in working with his class. Good self-concepts are positive predictors of teacher liking for average boys, but negative in superior boys; possibly the teacher welcomes motivating self-confidence in the less able boy, but deplores too much in boys who are bright and able. The child's liking for other children accompanies teacher liking for girls and for bright boys, but evidently is not seen as so desirable for less bright boys. Teachers like girls who achieve well, conforming to the expected "good student" pattern, but achievement is independent of teacher liking for the superior boys. Average boys who show need affiliation, who seek to gain affection from teacher, and have solid work habits, are well-liked, apparently because the dependency relation is gratifying to the teacher. However, this pattern does not apply to the teacher's liking for the bright boys. What the teacher likes in the bright boy is his attitude that he expects to improve over the year, his friendly relations with peers, and his social virtues.

Discussion

Liking for others

Research on correlates of sociometric status have mainly restricted the variables to mental ability (Dintler and Mackler, 1962) and various indices of adjustment (Sewell and Haller, 1956; 1959). Gronlund (1959) suggests that it is important to develop measures of characteristics or abilities which relate theoretically to group structure, and hence may have peculiar relevance as determinants of social status.

In the present study, the criterion used for eliciting choices of children was the classroom setting of work groups. Probably when the children are making their choices, they are thinking of possible good production by the group they are imagining, and also enjoyment of group social interaction. If this is true, then significant determinants of liking should be of two types: (1) those abilities which will promote efficient production such as mental ability, good work habits, and the kind of resource represented by good scores on achievement tests; and (2) affective characteristics associated with pleasant relations with others, particularly enthusiasm, optimistic attitudes, and consideration for others' feelings.

A high score on liking for others suggests that the child feels many people in the class meet these requirements for him; he would like to work with almost anyone. An extremely high score may possibly indicate some lack of discrimination or even a desperation in seeking acceptance. Extreme low scores certainly indicate either alienation of the person from the group or highly discriminative choices. The results reported in correlations of course involve these two extremes in the total range on the dimension.

Since the results found for determinants of liking *for* others of the same sex differed markedly for boys and for girls, some consideration must be given to the sex roles developed and expected in the school behavior of children of this age. Some years ago Tuddenham (1951) showed that strong predictors of status in upper elementary school girls were sociability and friendly interaction with others, while ability at games, daring and leadership, were more important in determining status of boys. His study did not include items relating to academic ability, but Coleman's (1961) recent study of values in a middle western high school population indicates that good grades take a poor place in the hierarchy of values for both boys and girls. Friendliness is more important for girls than for boys. It is well known that girls work harder than boys at school tasks and receive better grades. Our own data, on sex differences in mean values (Table B-1), show the girls significantly higher than boys on two groups of scores: (1) those involving affiliative tendencies (gain affection teacher, social relations with teacher, social virtues, social work, need affiliation) and (2) academic work habits.

The data suggest that because of differences in sex role expectations, high scores on liking other children of the same sex carry different connotations for boys and girls. For girls, liking *for* other girls appears in association with good achievement and work orientation. For boys, high scores on liking *for* other boys represent a rejection of work in favor of playboy characteristics.

Liking by others

Riecken and Homans (1954) present the idea that the person faced with a sociometric rating task rates others in terms of how well the ratee's actual behavior measures up to the rater's standards of what behavior ought to be. It follows that the more nearly a person realizes the norms and values of the group, the higher his sociometric rank. From this point of view, high positive prediction of liking by others will be found where the predictor is a characteristic positively valued by the group. The positive correlates of liking by the same sex reflect the cultural preferences of the sex, those of liking by the teacher the values of the teacher. Another way of saying this is that that one likes people who act to facilitate satisfaction of one's own needs and expectations, whether these be for congruity and self-esteem as a classmate or as a teacher.

In these classrooms, boys and girls tend to like (according to the criterion of choosing friends for work groups) the bright boys who are industrious, achieve well, and show friendly responses to their classmates. The same predictors hold for both girls' groups. These then may be thought to be the values of the class culture for the bright boys, and for girls regardless of mental ability. The less able boys cannot achieve popularity regularly by these means; their lesser mental ability prevents achievement reaching really good proportions in absolute terms, and, if they are friendly to others, they are apparently less liked by others. They are at a real handicap in realizing the norms and values of the class group, whereas the girls of lesser ability may do so. The girls' affiliative responses to the teacher probably facilitate this, as shown by our data and those of Lippitt and Gold (1959).

The values and needs of the teachers are made clearly evident in these results. Bright boys are liked if they are not so confident but that they think they are capable of some improvement--not resting on their oars, as it were. Self-sufficiency appears as desirable, and friendly behavior, but especially high scores on achievement tests are not a necessary condition of teacher liking. There is a suggestion here that teachers' needs for the total class are better satisfied if the bright boys are somehow brought down to size, or closer to the average of the class.

Quite different correlates appear in the boys of average ability whom the teacher likes. Here the teacher welcomes affiliative, dependent motivation, good feelings of confidence, and solid work habits. If the boy has only average ability, these characteristics permit the maximum influence by the teacher. Independence is not so much desired for these boys.

And for girls--teachers' values appear met with good student, friendly behavior. Work habits should be good in the girl of average ability, but are not so important for the bright girl.

In considering the purport of these results for understanding the impact on the school learning situation of the potential social rewards held in the hands of peers and teachers, one must bear in mind that the sample population came from an upper middle class population which has shown evidence of holding strong values for education (see Sears and

Sherman , 1964). Academic utilization, up to a point, is evidently important in this culture. For the brightest children, however, it is suggested that too much achievement is not regarded with favor. Girls of less than outstanding mental ability can get along well by hard work and good relations with the teacher. Boys like the average girl who is task-oriented in her classroom behavior. The less able boys may achieve some popularity through seeking affection from the teacher. Schachter (1959) has presented evidence showing that the state of anxiety leads to the arousal of affiliative tendencies. If a child is at something of a natural handicap in his school work because of mental ability below the average of the group, it is likely that his anxiety level is greater and his affiliative needs higher. The teacher can operate as a supportive figure in these cases.

Summary

1. Correlates of liking for other classmates, in fifth and sixth grade children show wide sex differences. Girls show high scores on liking for others in association with good achievement and work orientation. Correlates in the groups of boys suggest rejection of academic work in favor of sociable play attitudes.

2. Correlates of popularity, or liking by classmates, in this sample of children, are industrious classroom work, good scores on achievement tests,friendly attitudes toward other children, and favorable perceptions by teachers and peers on a number of characteristics. However, the group of boys who are below the mean in mental

ability show few predictors of popularity. For them the way to achieving liking by classmates seems independent of the determinants tested here.

3. Liking by the teacher shows quite different determinants for bright and less bright boys. Positive predictors for the superior boys are the boy's attitude of expecting to improve over the year, his friendly relations with peers, and his social virtues, or consideration for others. In the case of the average boys, the teacher tends to like those who show happy qualities and seek to affiliate with the teacher. For both groups of girls, good achievement and liking for other children are associated with liking by the teacher.

4. These results have been interpreted in terms of the norms and values of the peer group, the satisfaction of needs in the teacher, and the reduction of anxiety through tendencies to affiliation.

CHAPTER VI. CLASSROOM WORK BEHAVIOR OF CHILDREN*

Introduction

Children's work habits have long been a popular index to the effectiveness of teaching. Most adults tend to value the quiet and industrious classroom. But, as Ryans (1961) and Mitzel (1960) have pointed out, directly observed pupil behavior in process may be quite different from the products resulting from pupil behavior. Behavior in process may be instigated by different antecedent conditions and the same behavior may be related to different consequences in different children. Nowhere in the literature have relations been demonstrated between work behavior and end products such as children's achievement or creativity. Are there rewards for industry in the classroom besides peace of mind for the teacher? What are characteristics of children who do work regularly, as compared to those who are less industrious? The present study presents an analysis of correlates of observed work behavior in fifth and sixth grade children.

Method

The research has been designed to show the relation of a number of other variables, which we will call predictor variables, to the target variables of the child's work behavior in the classroom. Measurements

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*This chapter was written with the assistance of Margaret H. Pintler.

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of most variables were made twice: once in the fall and again in the spring. Thus the correlations useful for answering the questions we have asked are those between a series of predictor variables, taken in the fall and spring, and the children's level of work behavior at the two points.

Measurement of classroom behavior

The method of point sampling was used. A trained observer sat or stood unobtrusively where he could view all members of the class, looked at the first child on his class list and indicated by a symbol the behavior of that child at the moment, and then immediately went on to score another child. Scoring was continued until all members of the class were covered; once around all class members constituted one behavior sample for each child. Fall and spring scores are each based on more than 150 such samples per child.

Behavior was categorized into one of seven categories, of which three were of work type: task-oriented work, social work, and intent on other academic work. The other four behavior categories were irrelevant to work: social friendly, wandering, daydreaming, and intent on other, non-academic, activity. All behavior was placed in some category; frequencies in one are not, then, independent of frequencies in other categories. For the present analysis the two categories of task-oriented and social work are used. These are by far the most frequent behavior observed: means for the total group show that the average child in this sample is engaged in task-oriented work about 77 per cent of the time, and social work about 13 per cent.

Task-oriented behavior was defined as follows: The child is intent on the ongoing work or discussion, task-oriented, is doing what he is supposed to be doing. Includes actively working on the task and also collecting, getting out, organizing or putting away materials necessary for work. Includes thoughtful staring when the child seems to be involved in the work task. Key phrase is oriented to work. The behavior is generally conforming to classroom routine, and generally nonsocial.

Social work behavior was defined as follows: any social remark, interchange, or action which is work-oriented. Reserve this category for the expression of social needs in relation to work tasks. Children explaining task to each other, noting each other's progress, showing own progress on task, giving or getting suggestions in regard to work, actually cooperating and sharing a task socially. In discussion any direct verbal contribution and also any evidence of an attempt to contribute, such as raising hand. Asking teacher a question about work.

Reliability of observation, measured by percentage of agreement between two observers categorizing behavior at the same moment, was about 90 per cent. Trait reliability, or the consistency of the children over a period of time,was estimated by correlating first and second halves of 210 observation rounds taken over a three week period. This correlation was .60.

Data analysis. Mental ability is a major determinant of scores on achievement tests, and is, to a lesser extent, related to such creativity tests as were used here. Mental ability has also been shown to be related to sociometric status and perceptions of children on various desirable characteristics (Dentler and Mackler, 1962). We therefore expected that bright and less bright children would show different relationships between the target variable of task-oriented classroom behavior and scores on the predictor variables.

The knowledge that one can score well on the tests may be reinforcing to classroom work behavior in some children. To others, good achievement may relieve the child from the necessity for work. If he achieves well, he may be able to turn his attention to other, more personally rewarding, enterprises.

Furthermore, considerable work of our own and of others (Kagan and Moss, 1962; Sarason et al., 1960) suggests that boys and girls of elementary school age adopt somewhat different patterns of response to the demands of the culture with reference to academic achievement. It is highly probable that the demands of the culture are seen correctly, by the children, as different for boys and girls. Classroom work behavior may serve different functions for boys and for girls in middle childhood in terms of the extent to which it is instrumental in meeting their own goals; this may be reflected in different predictive strengths of test scores, sociometric status, and the like.

Good academic achievement (academic success) might be expected to be reinforcing to further work along same lines; in this case we would suppose that children who achieve well in the fall would show the more task-oriented work in the fall and even more in the spring. Other things being equal, the effect should be cumulative over the year.

In order to test these suppositions, the 195 child subjects were divided into four groups: boys of superior mental ability, who scored above the group mean of approximately I.Q. 115 on the Primary Mental Abilities composite; boys of average mental ability, who were below the group mean; girls of superior mental ability and girls of average mental ability, selected in the same way. Each group numbered about 50. Although these subjects came from seven different classrooms, and the classrooms differed somewhat in mean scores on the PMA, there were not more than two or three children in each group which were not in the same (high or low) half of their own classroom as they were for the total sample of seven classrooms.

Correlations were run between the target variable of level of work behavior and the predictor variables within each of these four groups.

These will be discussed in terms of prediction of the two categories of work behavior (the target variables) by scores on the predictor variables. The reverse question is equally appropriate; to what extent are scores on the predictors determined by work behavior?

Results

Mean differences, sex and ability groups

Table 21 gives mean frequencies of the two types of work behavior.*

There are no significant mean differences between groups on task-oriented behavior, but the variability of such behavior increased in the

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*The third work category, intent on other academic activity, accounted for only 1 per cent or 2 per cent of the total behavior, and has been omitted in the analysis.

Table 21. Classroom work behavior - means and S. D.'s, percentage of total observed time devoted to task-oriented and social work behavior.

	FALL				SPRING			
Task-oriented	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
N	47	48	49	51	47	48	49	51
Mean	75.4	76.5	77.6	77.2	77.9	75.9	77.0	74.4
Standard dev.	9.4s	7.5	6.9	8.5	10.5	10.2f	10.8f	11.7f
Social work								
Mean	12.6	10.1	13.1	11.3	10.5s	11.3s	15.3	15.6
Standard dev.	4.8	3.8	5.5	5.1	4.9	4.8	7.4	7.6

Table 22. Classroom work behavior - fall-spring stability and intercorrelations

	Superior boys	Average boys	Superior girls	Average girls
N	47	48	49	51
Task-oriented, fall x spring	.18s	.20	.64**a	.35*
Social work, fall x spring	.20	.20	.54**	.22
Task-oriented x social work, fall	-.50**s	-.37*	-.75**	-.57**
Task-oriented x social work, spring	-.34*s	-.58**	-.82**	-.90**

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spring as compared to the fall. Girls engage in more social work behavior than boys, especially in spring, and the variability for girls is large.

These figures for classroom work behavior seem high for the rather permissive atmosphere of the classroom observed. The means, no doubt, reflect the serious, work-type purposes of most of the children involved. Also, although observations covered entire mornings for a week in each classroom, the transition periods, getting settled, and recesses were not included in the sample of behavior. The children may have worked harder than usual because observers were in the room, but casual observation suggests that this was not a major factor.

Stability of behavior over the school year. Table 22 gives intercorrelations between fall and spring frequencies and between the two types of work behavior. The superior girls show strongly stable behavior from fall to spring, and for both groups of girls the two forms of work behavior are nearly reciprocal; a high score on one is associated with a low score on the other, particularly in the spring. This finding will be discussed in a later section.

Superior boys, average boys: task-oriented work. The fall child variables predicting task-oriented work for the superior boys are entirely negative (Table 23). High frequencies of such work are associated with low happy qualities and liking for other children, unfavorable attitudes, and low scores on creativity tests. Achievement is unrelated. For the average boys, the predictors are somewhat different: the boys

Table 23 TARGET VARIABLE: CLASSROOM BEHAVIOR - TASK ORIENTED WORK

PREDICTOR VARIABLES↓ (Child variables)	Fall scores Superior boys	Average boys	Superior girls	Average girls	Spring scores Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall								
Happy qualities	-.21 a	.39**						
Overall mean		.28*						
" satisfact								
" improve						.18 s		-.23
Spring								
Happy qualities					-.29* s	.02 f	.15	
Overall mean								
" satisfact							.23	
" improve								
2. Social relations								
Fall								
Liking for same sex	-.48**a,s	-.08	.20					
Liking for opp sex	-.21		-.11	.01				
Spring								
Liking for same sex					-.16 f			
Liking for opp sex					.31* f		.36* f	.42**f
3. Classroom behav'r								
Fall								
Task oriented work					.17 s	.20	.64**a	.35*
Spring								
Task oriented work								
4. Achievement tests								
Fall								
Total composite	.03				.23 s		-.29*	
Reading "		.20					-.26 a	.30*
Work study"	.04	-.07		.28*	.31* s		-.29*	
Arithmetic"	-.08				.20			-.24
Spring								
Total composite					.31*s,f		-.13	
Reading "					.24			
Work study"					.42**s,f	.21 f	-.05	
Arithmetic"					.26 s,f		-.17	
5. Attitudes - Fall								
Academic	-.21 a,s	.22	.33*		-.12 s	.20	.46**a	-.00
Intensive study		.20	.24				.35*	
Overall mean	-.15 s	.22	.43**a	-.12	.06 s	.27	.55**a	-.11
Spring								
Academic					-.09 a	.33*	.21	
Intensive study					-.15 a	.28*		
Overall mean						.25		
6. Creativity - Winter								
Plot originality	-.33*	-.20						.29*
Things fluency			-.29*	-.24		-.24	-.25	
Things unusual		-.26	-.23				-.21 a	.33*
Object synthesis	-.26 a	.28						.26
7. Primary mental abils. - Winter								
Total composite								.26
Verbal								.24
Space	-.24 s		.24				.24	.25
Reasoning					.37* s		- .04	.20
Number					-.20	-.26	- .25	-.25
8. Motives from TAT								
Winter								
Need achievement			-.20					-.35*
Need affiliation								
Need power							.22	

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who work a good proportion of the time report happy qualities, good self-concepts over-all, and moderately positive attitudes. These differences suggest a withdrawing pattern in the superior boys in connection with independent work at the beginning of the year, while for the average boys industrious work seems to represent an approach to enjoyable activity.

For the two groups of boys, scores on task-oriented work are not highly stable from fall to spring (r's of .17 and .20), showing that the boys who were hard-working in the fall do not necessarily show the same behavior in the spring. High spring task-orientation is found in superior boys who like girls and achieve well. That their orientation is serious rather than gay is indicated by the persistent negative relation to happy qualities.

Table 24 shows perceptions of teacher and classmates in relation to amount of task-oriented work. These are nearly all positive for both groups of boys, and many are significant. If they are respected by others, particularly for their intrinsic interest in the school activities, their work habits, and relations with the teacher, they tend to work hard. Or possibly, as has been brought out in the chapter on social relations, industrious independent work is admired by teacher and peers and hence boys who show it are perceived favorably in other ways. For the average, but not the superior boys, there are spring positive correlations with seeking to gain affection from teacher and peers.

Table 24 TARGET VARIABLE: CLASSROOM BEHAVIOR - TASK ORIENTED WORK

PREDICTOR VARIABLES ↓ of (perceptions/others)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings								
Fall								
Attractive appear	.24	.35*	.04	.35*			-.24	
Physical ability		.40**s	.12	-.02				
Work habits	.28	.32*	.29*	.42**		.23		
Social virtues	.27	.25	.18	.36*			-.26	
Happy qualities	.20	.22	.18	.21				
Creativity	.21	.21		.27		.28	-.30*a	.17
Intrinsic interest	.31*	.31*	.21	.31*				
Seek stat: acad						.22	-.24	
Seek stat: social				-.40**		.15 s	-.24	-.27
Gain affect: peers		.01				.30* s		-.13
Gain affect: teach		-.05						
Spring								
Attractive appear					-.17 f	-.01 f	-.26 f	
Physical ability						.01 f	-.20 f	
Work habits					.30* s		-.14 f	.12 f
Social virtues					.32* s		-.16 f	
Happy qualities							-.11 f	
Creativity								.31*
Intrinsic interest					.35* s	.25	-.21 f	
Mental ability					.05 s		-.31*	
Seek stat: acad					.32* s	.27	-.14	
Seek stat: social							-.31*	
Gain affect: peers						.33* f		
Gain affect: teach						.34*s,f		-.07
2. Teacher Social Distance - Spring								
Teacher liking for child					.21 s	.23	-.21 a	.20
3. Peer nominations								
Fall								
Attractive appear		.32*				.25		
Physical ability			.14					
Work habits	.35*	.28				.20		
Soc.rel.with teach	.36*	.40**	.25			.35*		
Mental ability	.31*	.32*	.22	.20		.30*		
Social virtues		.21	.31*			.23		
Spring								
Attractive appear								
Physical ability							-.26 f	
Work habits					.06 f			.20
Soc.rel.with teach					.21	.43**	-.05 f	
Mental ability							-.22 f	
Social virtues					.24		-.04 f	.22
4. Social Distance								
Fall								
Liking by same sex	.35*	.30*	.23	.30*	.41**s	.41**	-.26 a	.18
Liking by opp sex			.30*	.33*			.15 a	.59**
Spring								
Liking by same sex					.31*		-.05 f	.24
Liking by opp sex					.31*	.44**	.39**	.65**

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These relationships suggest a dynamic interpretation. Bright boys who seriously wish to achieve may show much task-oriented classroom behavior; for them this pays off in terms of good academic achievement and the respect of teacher and peers. Less able boys who choose to work industriously are not able to show much better achievement on tests, but the work enables them to feel good with themselves and to be liked by significant others in the classroom. There appears to be some shift from fall to spring in how the average boys are perceived by others: industry is related to somewhat more academic areas in the fall and more to interpersonal areas in the spring.

Superior boys, average boys: social work. Tables 25 and 26 give the correlates of social work behavior. More such behavior is shown by superior boys when they like many of their classmates.* There are also positive relations to creativity test scores: the more "creative" superior boys work more socially. Achievement is unrelated. Teachers and other children like the bright boys who work socially a good bit; as they also like those who show high frequencies of task-oriented work. However, such liking does not generalize to teachers' judgments of the boys' fall work habits and intrinsic interest; these are judged low if the boy works socially a large proportion of the time. Most

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*Wanner (1960) studied classroom work behavior under two different seating arrangements: sociometric choice and alternate sex. He found that the total amount of industrious work was not different for the two conditions, but that when seated under the sociometric choice plan children worked more socially and less independently. The reverse was true for the alternate sex seating arrangement.

Table 25 TARGET VARIABLE: CLASSROOM BEHAVIOR - SOCIAL WORK

PREDICTOR VARIABLES (Child variables)	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
Self-concepts - Fall								
Happy qualities								-.26
Overall mean								-.31*
" satisfact.	.25	.23						-.27
" improve.			.21		.29*			
Spring								
Happy qualities					.25			
Overall mean								
" satisfact.								
" improve.								
Social relations - Fall								
Liking for same sex	.53**			.24	.33*a	-.11	.35*	
Liking for opp. sex	.35*	.23	.35*				.47**a	-.07
Spring								
Liking for same sex								
Liking for opp. sex						.05 s		-.42**
Fall								
Classroom behavior								
Task-oriented	-.50** s	-.37*	-.75**	-.57**	-.13 s		-.54**	-.31*
Spring								
Task-oriented					-.34* s	-.58** s	-.82**	-.90**
Achievement tests - Fall								
Total composite			.24				.34*	
Reading "			.31*				.30* a	-.31*
Work study "							.29*	
Arithmetic "				.20			.24	.21
Spring								
Total Composite							.20	
Reading "								
Work study "								
Arithmetic "					.20			
Fall								
Attitudes								
Academic	.23			.27	.20 s		-.23	
Intensive study				.22				
Overall mean	.22 s		-.26 a	.29*			-.39**	
Spring								
Academic					.27			
Intensive study								
Overall mean					.21			
Creativity - Winter								
Plot originality							.14 a	-.32*
Things fluency			.35*	.29*	.36*	.32*s	.38**a	-.16
Things unusual			.33*		.35*		.40**a	-.35*
Object synthesis	.51**		.31*		.32*		.28*a	-.38**
Primary mental abilities - Winter								
Total								-.27
Verbal		-.23 s		.27				-.21
Space								-.24
Reasoning								-.23
Number					.41**	.31*	.31*	.24
Motives from TAT - Winter								
Need achievement		-.25	.26					.28*
Need affiliation							.27 a	-.14
Need power		.22				.35*		

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Table 26. TARGET VARIABLE: CLASSROOM BEHAVIOR - SOCIAL WORK

PREDICTOR VARIABLES ↓ (Teacher & peer perceptions)	FALL				SPRING			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
Fall								
Teacher ratings								
Attractive appear.		.30*					.26 a	-.24
Physical ability			-.04 a	.36**	.23			
Work habits	-.33*a	.07			.29*a	-.20		
Social virtues		.23					.29*	
Happy qualities		.31*			.23			
Creativity			.21			-.22	.27 a	-.17
Intrinsic interest	-.31*a	.15			.20			
Seek stat: acad.				.43**				
Seek stat: social			.23	.41**			.32*	.25
Gain affect: peers			.27				.25	
Gain affect: teach.		.32*						
Spring								
Attractive appear.							.28*a	-.17
Physical ability					.24		.27	
Work habits								
Social virtues								
Happy qualities					.37*		.22	
Creativity							.15 a	-.40**
Intrinsic interest							.31*	
Mental ability							.26	
Seek stat: acad.							.25	.21
Seek stat: social							.39**	
Gain affect: peers							.21	
Gain affect: teach.								.21
Spring								
Teacher like child					.31*		.41**a	-.08
Fall								
Peer Nominations								
Attractive appear.				.20	.28 a	-.15		
Physical ability		.32*			.25			
Work habits					.28		.22	
Soc. rel. with teach.				.24	.25 a	-.20		
Mental ability					.27			
Social virtues		-.30*			.43**a	-.17		
Spring								
Attractive appear.							.20	
Physical ability					.33*	.25		
Work habits					.33*			-.22
Soc. rel. with teach.					.22 a	-.23		
Mental ability					.30*		.21	
Social virtues					.27			
Fall								
Liking by same sex	.29*				.22		.33*	
Liking by opp. sex	.33*					-.01 s	.18 a	-.44**
Spring								
Liking by same sex					.35*	.20		
Liking by opp. sex							-.05 a	-.53**

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striking, however, are the relationships with spring peer nominations on a variety of characteristics: socially working superior boys receive many positive nominations while for average boys the correlations are chiefly negative.

Social work behavior carries different correlates in other respects for the average boys. Their liking for other children is not a predictor, whereas the TAT score on need power is a positive predictor of social work behavior. By spring, the teacher and peers see the average boy unfavorably in association with social work. It is as if such behavior is seen as desirable for the bright boys but an interference to more important things in average boys. And perhaps the power needs which the latter may display in connection with such work are not a help to them in modifying the harsh judgments of others.

Superior girls: task-oriented work. Superior girls are highly stable in the proportion of task-oriented work shown in the fall and in the spring (.64). However, the range of such behavior in the group widened markedly from fall to spring, and many of the correlates shifted over the year. From Table 23, it can be seen that in the fall, the only significant child characteristics predicting task-oriented work are favorable attitudes toward school and low creativity. Fall achievement scores predict negatively to spring task-orientation; that is, fall high achieving bright girls show less independent industry in the spring. Perceptions by teacher and peers are generally positively associated with task-oriented work in the fall, shifting to nearly

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completely negative relations in the spring. Contrary to the positive relations between task-oriented industry and respect from others found for the boys, bright girls who are unfavorably regarded by others work harder on the given tasks (or vice versa). This suggests a retreat into work as a solace against frustration experienced in other areas, and is sufficiently startling to warrant further exploration of the possible meaning of task-oriented work to these bright girls.

Superior girls: social work. For the bright girls, the correlation between task-oriented and social work is strongly negative (Table 22). Correlates of the two should be opposite in direction. From Tables 25 and 26 this is shown to be generally true. Superior girls show much social work behavior in association with high liking for other children, good achievement and creativity scores. Teachers like superior girls (and boys) who work socially, and judge them favorably in a number of ways. It is likely that these children can assist the teacher by explaining and helping children who are puzzled by some aspect of their work. Note, from Table 25, that children from all groups who score high on PMA number engage in more social work, possibly helping others with math. Teachers no doubt encourage this behavior progressively over the year in children of superior ability. Kowatrakul (1959), using the same observational technique for examining kinds of work behavior associated with subject areas, found social work to be high in arithmetic lessons.

These analyses of social and task-oriented work behavior show sex as well as ability differences. While teachers like and admire bright boys who show high scores on either form of work behavior, the bright girls who are high in task-oriented behavior are not regarded favorably; those who are high in social work behavior are liked and seen in favorable terms by the teacher. There seems to be a suggestion here of appropriateness of sex role: girls should be sociable, helpful, nurturant and not academically competitive. Independent, nonsociable work is desirable in bright boys but not in bright girls.

Average girls: task-oriented work, social work. For the girl who does not have high tested mental ability, what are predictors of the frequency of her task-oriented work? From Tables 23 and 24, positive predictors are shown to be her liking for and by the opposite sex, and high creativity. Need achievement is a negative predictor. Like the other groups, average girls who are favorably regarded by teachers and peers in the fall tend to be highly task-oriented, but by spring these favorable ratings are sparse for the average girls. Most striking on the positive side is the strong (.65) association in these girls between the amount of their task-oriented work and the extent to which boys like them.

These correlates form a picture of an average ability girl working hard independently in association with liking for and by boys, with also a certain talent for creative expression, and some possible submissive tendency (low need achievement). Average girls who score high on task-oriented work are among the highest in the limited range of mental ability test scores within their group.

Correlates of socially oriented work are, as expected, diametrically opposite: low creativity and mental ability, high need achievement and dislike from boys.

Discussion

Evidently task-oriented work carries a somewhat different significance when displayed in the fall of the school year as compared to the spring. Children entering a new classroom with a new and perhaps strange teacher no doubt are uncertain as to how they may best achieve their own goals. The present results suggest that children who test high in creativity show less task-oriented work in the fall. Achievement test scores, however, are uncorrelated with work behavior at that time. Bright boys tend to work socially if they are able to express liking for many of their classmates; they tend to attend to the task independently if they like few children well. Teachers in fall view favorably children of all groups who show task-oriented behavior, but social work behavior is not necessarily associated with positive perceptions by teachers and peers.

By spring, after approximately seven months in the same classroom, the sex and mental ability groups have diverged; there are a number of significant differences in correlates of both types of work behavior. These involve both the sex and the mental ability breaks, and are particularly marked in the two groups, boys and girls, of superior mental ability.

These children of 11 and 12 years are approaching adolescence.

Kagan and Moss (1962), on the basis of longitudinal study have described a syndrome which they call "flight into femininity" for girls of this age, involving reduced academic involvement, particularly as it involves public display or the suggestion of competition with boys. Some bright girls, who can do reasonably well on tests, may find social classroom behaviors more rewarding than independent task-oriented work. The present group of superior girls shows increasing variance, toward spring, in the percentage of time they devote to both task-oriented and social work, and the correlation between the two forms of work behavior is strongly negative. Teachers and peers apparently reinforce the expectation that the girl be socially rather than task-oriented; at least they view more favorably those who are more engaged in social work.

Bright boys at this age, less mature and less socially oriented than the girls, perhaps have to struggle less against competition from other than task motives. Task-oriented behavior follows from reinforcement from earlier achievement. Such behavior may also appear as instrumental to their central goals of achievement, and fits well with teachers' expectations, although classmates show real respect for the bright boy who shows high social work and less for the highly task-oriented bright boy.

It is interesting, also, to note the consistent sex differences that are apparent in those areas of teacher ratings that might be represented as motivations or strivings on the part of the pupils, i.e., seeking status by academic or social means, gaining affection of peers or teacher. In all instances these ratings show positive correlations with industrious classroom behavior for the boys and negative correlations for the girls, some of them too small to appear on the table. Several are, however, large enough to produce significant sex differences. It is as if the teacher were seeing industrious classroom behavior for the boys as a legitimate or perhaps effective means of indication of striving. For girls the teacher's frame of reference is different. Industrious behavior is not seen as positively related to striving--on the contrary it seems to the teacher to be indicative of lower levels of striving. There is a clear change in the teacher's assessment of the superior girl relative to industrious classroom behavior from fall to spring. In the fall the teacher viewed the superior girls as he did the other groups--high scores on industrious classroom behavior were positively related to high teacher ratings of work habits, social virtues, intrinsic interest. By spring the teacher assesses the superior girl very differently--now high scores on industrious classroom behavior are associated with low scores in these same areas--and this sort of change is apparently only for superior girls.

When one recalls that the fall-spring correlations for task-oriented behavior for the superior girls were markedly higher than for our other groups, one wonders if the teacher is viewing high scores on task-oriented behavior in the spring as only a continuing sort of conformity for these industrious superior girls. Indeed, the relationship between actual achievement test scores and task-oriented behavior for these superior girls shows that highly task-oriented girls (fall) are low on achievement in the spring.

In view of our limited knowledge about talents for so-called "creativity" tests, the relationships here are intriguing. Creativity is generally negatively related to task-oriented work, perhaps reflecting a dislike for conforming, task-appropriate behavior in children who have unusual ways of thinking. In the superior groups of children, there are strong positive relations between creativity and social work. In average girls, the creativity scores predict work patterns oppositely; the more creative show high task-oriented and low social work. Here it looks possible that the originality and flexibility associated with creativity may provide a resource which enables the girl to work to maintain herself academically in spite of lesser mental ability. Chapter VII shows that there are strong positive correlations between creativity and standard achievement scores in these average ability girls, and zero or negative relations in superior girls.

The initial suppositions that work behavior carries different implications and rewards for children of different sexes and levels of mental ability have been supported. Two types of variables, in addition to sex and mental ability, appear to operate to guide the kinds of work behavior shown by these children. These are (1) the child's own skills for social interaction and cognitive processes, and (2) the expectations and values held for children of given sex and talent.

The educational implications of the results are sufficiently drastic that tests for replication of these findings on new samples is indicated.

Summary

1. Sex and ability groups of fifth and sixth grade children did not vary in the sheer proportion of the school day spent in task-oriented work behavior. Girls showed somewhat more social work behavior than boys. Frequency of the two kinds of work was, however, predicted by different things for the four sex and ability groups, and had different consequences for children of the four groups.

2. For boys of superior mental ability, task-oriented classroom behavior is found to be associated, in this fifth and sixth grade sample, with withdrawal from other children at the beginning of the year. Toward spring those boys who work independently a large proportion of the time are found to be high scoring on achievement tests and well respected by the teacher.

3. Superior boys who are high on social work behavior tend to be attracted to many of their classmates, to have creative modes of thought, to be moderately favorably viewed by the teacher, and to be highly regarded by classmates.

4. Superior girls also show a withdrawal pattern in connection with task-oriented work, but in their case this is not accompanied by favorable regard from teachers or peers. The data suggest that task-oriented work is seen by teachers and peers as a legitimate or effective means of striving for bright boys but as somehow inappropriate or

undesirable for bright girls of this age.

5. Superior girls scoring high in social work behavior are also high on liking classmates, and creativity, like the bright boys. Additionally, however, they do well on achievement tests, and are liked very well by the teacher, who judges them favorably in a number of respects.

6. For the groups of boys and girls of average ability, social work behavior has few positive correlates. Task-oriented work, on the other hand, in this sample appears instrumental to good interpersonal relations with teacher and classmates.

7. These results have been interpreted in terms of the effect of work behavior on children's successful adaptation to the goals held by themselves and by others for them, depending on (a) the talents and attitudes they bring with them to the classroom, and (b) the expectations and reactions they meet from significant others in the classroom group: the teachers and peers.

8. Replication of these findings on other samples is needed.

CHAPTER VII. PREDICTION OF ACHIEVEMENT TEST SCORES*

Introduction

This chapter deals specifically with the most readily accepted of all achievement goals of the school, academic achievement. Here we are concerned with reading, arithmetic, and work-study skills as target variables, and are interested in the child personality variables as well as teacher and pupil ratings as predictors of academic achievement. What is the relation between teachers' judgments about a child's potential achievement and his actual attainment? How well do peers' ratings predict success or lack of academic success? Are peers or teachers more skilled as judges? Do we find clusters of variables related to academic achievement? Which if any of our ratings, teacher, peer and self, are useful predictors of academic success?

The present measures of academic achievement are those produced by the Science Research Associates: (1) the achievement battery of reading, arithmetic and work-study skills Level 5 (Forms A-B), and (2) the Primary Mental Ability Tests (7-12). These tests, proficiency tests, can be divided into Cronbach's 1960 classification as forward looking tests (aptitude--PMA) and evaluative decisions which look backward (achievement--SRA series). In this chapter the PMA scores will be used as a predictor (forward looking). In addition, the fall achievement

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*This chapter was written by Nicholas Anastasiow.

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tests will be used as predictors of the spring academic achievement scores. However, academic achievement per se remains the target variable, and the hypotheses deal primarily with the prediction of achievement from our other measures. We also are interested in examining the shared variance of academic achievement and the other variables of this study as reflected in the correlation coefficients. In addition, we are interested in exploring the possible frame of reference or anchor that raters use when rating.

Results

Mean differences all groups on Primary Mental Abilities

The four sex-ability groups were formed by dividing boys and girls separately at the population mean of the composite PMA scores (see Chapter IV for the method of computing the composite). Table B-1 Appendix shows that there are two significant sex differences on the PMA sub-tests: boys of both superior and average over-all ability score better than girls of similar over-all ability on the space subtest, as has been demonstrated before in the literature. In our sample, average girls do better than average boys on the reasoning test. This latter finding is probably due to chance sampling errors, since it is not supported by the findings of others.

Primary mental abilities as predictors of academic achievement

The PMA test is an aptitude test that is designed to be a forward-looking or predictive test. The correlations of PMA and the composite achievement measure are reported toward the bottom of Table 27.*

We find that nearly all PMA scores are significantly positively related to achievement tests. The space sub-test does not correlate with achievement, and there are generally low, often non-significant correlations between PMA and achievement in the superior girls' group.

The findings of the high correlations for all groups save the superior girls is not surprising. However, the low correlation between the PMA and achievement scores for these girls needs explanation. We predicted that mental ability so tested should be related to academic achievement. The mean scores demonstrate that the superior girls are indeed superior as a group on academic achievement measures; however, their superiority is not directly related to composite PMA. Our first attempt at explanation is due to the nature of the restriction of the range once the ability groups have been established. Thus, while positive relationships exist between PMA and achievement for all boy and girl groups, dividing the groups at the mean restricts the statistical range and lowers the correlations.

Scatter plots reveal that while as a group superior girls are high academic achievers, some have markedly low scores on the achievement tests. Thus, the ability to do well on achievement tests as measured by an aptitude test is not always borne out for superior girls, although it is for superior boys and both groups of average ability.

We offer another explanation that is not directly testable with

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*Tables showing correlations with reading, work-study, and arithmetic composites are placed in the Appendix as Tables B3, B4, B5.

Table 27 TARGET VARIABLE: ACHIEVEMENT TESTS - TOTAL COMPOSITE

PREDICTOR VARIABLES ↓ (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall-Happy qual.				.21				
Overall mean		.24		.32*				.26
" satisfact				.27				
" improve			.23					
Spring-Happy qual.								
Overall mean								
" satisfact					.21			-.24 f
" improve								
2. Social relations								
Fall								
Liking for same sex	-.18 s		.41**		-.17 s		.41**a	-.07
Liking for opp sex	-.23				-.23	-.22		
Spring								
Liking for same sex						-.25 s		.27
Liking for opp sex						-.23		
3. Classroom behav'r								
Fall								
Task oriented work								
Spring								
Task oriented work					.31* s		-.13	
4. Achievement tests								
Fall								
Total composite					.93**	.87**	.86**	.76**
Reading "	.85**	.89**	.86**	.79**	.78**	.79**	.70**	.62**
Work study "	.92**	.94**	.85**	.81**	.87**	.85**	.72**	.61**
Arithmetic "	.91**	.93**	.85**	.83**	.83**	.76**	.80**a	.61**
Spring								
Total composite								
Reading "					.88**	.88**	.86**	.87**
Work study "					.88**	.94**	.81**	.91**
Arithmetic "					.94**	.91**	.91**	.90**
5. Attitudes								
Fall-Academic						-.25 s		.18
Intensive study								
Overall mean								
Spring-Academic					.24			
Intensive study					.25			
Overall mean					.25			
6. Creativity								
Winter								
Plot originality			.32*	.24				.24
Things fluency	.35*			.34*	.47**s		-.12 a	.45**
Things unusual	.46**	.24	.21		.56**s	.31*	-.01	.31*
Object synthesis	.38*			.31*	.41**			.32*
7. Primary mental abils.-Winter								
Total composite	.73**s	.65**	.37*	.56**	.71**s	.69**	.28	.56**
Verbal	.72**	.68**	.55**	.49**	.66**	.76**s	.51**	.51**
Space								
Reasoning	.47**	.46**	.20	.53**	.56**s	.50**	.20	.48**
Number	.36*	.25	.24		.34*			
8. Motives from TAT								
Winter								
Need achievement								
Need affiliation			.26	.28*			.38**	.21
Need power		.25						

See code, page 45 .

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these data. It may be that superior girls use the talents measured by PMA to achieve other goals not reflected in academic achievement measures. Coleman (1962) has shown that a mentally superior girl is caught in a cross bind situation between parents and teachers demanding high academic achievement on the one hand, and boys' judgments, a potent force at this age, demanding less superior achievement on the other. In the last chapter we mentioned Kagan and Moss's (1962) flight into femininity concepts. The low correlations found here may also reflect Coleman's findings that the brightest girl is often not perceived as the "brightest" by her peer group although she is by her parents and teachers. This will be discussed in another context below.

The academic achievement measures as predictors of future achievement

As Cronbach (1960) has stated, proficiency measures such as the tests used in this study are the best predictors of future achievement. Intercorrelations of fall and spring subtests of achievement are also shown in Table 27.

The intercorrelations of the achievement data reveal no surprises. The child who does well in one area generally speaking does well in all other measures of achievement. Both boys' and girls' patterns of intercorrelation are very similar. Each achievement area of our battery contributes about the same to the composite. It would appear that any one of the three composite scores of achievement can be used as predictors. Most correlations are extremely high. Fall academic achievement tests clearly predict the spring scores. Girls' fall-spring correlations are less stable in some instances than boys', but are over .50, and so would serve as useful predictors.

Teachers, then, can expect that a group's fall academic achievement will predict spring achievement, and that individuals in the group will maintain their same relative standing in relation to their group. Thus, high achieving boys will generally remain high and low achieving boys will remain low. On the face of this it is what we would predict, but we are confronted with the fact that these correlations show that individual growth appears to be somewhat uniform within a group. Correlation of the total composite fall-spring of .93, .87, .86, and .76 for the sex-ability groups leave little room for marked change in individual academic status within the group. Thus, one would expect the peers and teachers observing daily performances to be accurate predictors of a child's standing in the group.

Teacher perceptions of children

Several factors modify a hypothesis that would state that teachers and peers should be excellent predictors. Teachers, although test scores are available to them, do not uniformly place reliance on the tests' ability to predict future academic success. Teachers use their own frame of reference, which has been shown by Anastasiow (in press) to be anchored in the class grade level. Teachers often apparently bring down the superior child to the grade level they are teaching and do not really discriminate among high ability children. In seven classrooms, Anastasiow has shown that teachers make an average error of over twograde levels in assigning children to reading groups.

Teachers do, however, discriminate between low and high ability children. They are able to discriminate among children, but tend to group children rather than to rank them. Thus, we predict correlations of teacher ratings with achievement will tend to be significant and positive but much lower than correlations of aptitude with achievement measures. In addition, halo effect has been demonstrated to operate in ratings where the behaviors have not been clearly defined. We would predict, therefore, that teachers' ratings of non-academic measures will be positively related to the achievement tests.

These correlations should be higher for boys, for reasons which follow. Brown (1958) and others have demonstrated the high value placed on masculinity in our culture and the association between masculine behavior and the success motif. Anastasiow (1963) has shown the relationship between masculinity and achievement. Thus, teachers are hypothesized to be less subject to halo with girls where the culture expects, as Coleman (1962) has demonstrated, other achievements rather than the academic one. Yet the culture also presses girls into academic achievement.

Stated differently, superior academic achievement, when culturally approved and sex-typed, will be perceived by the agent of the culture (the teacher) as separate from other behaviors. Superior "achievement," when not sex-typed or culturally stressed, will be perceived as more than academic achievement. Other behaviors which may or may not be related to academic achievement will be positively correlated with academic achievement by teachers' ratings for girls.

In addition, we predict that teachers will tend to rate higher on non-academic behaviors children of average ability who are achieving more than other children within their group. This will result in positive correlations of teacher ratings and academic achievement within average groups. That is, the teacher will generalize the achievement made by the average group to other variables because of the child making some achievement gains. The low achiever, in our theory, presents to the teacher a tangled snarl of behavior within which he is unable clearly to separate the personality and attitude variables from low academic achievement.

From another stance, academic achievement reinforces academic achievement and failure to achieve reinforces the teachers' judgment that personality variables of the child are equally low.

We find that teachers' ratings of academic achievement are positively related in all groups to the composite academic achievement tests. These findings are reported in Table 28.

Two possible directions can be taken in the explanation of the relationships between achievement and teacher ratings. The most direct explanation is that teachers are skilled in identifying those children who do well in academic areas and rate those who do well in academic subjects as having the abilities they do in fact possess. Our data reveal that in general the teachers are able to use the test material they possess (and/or classroom observations of the children's

Table 28 TARGET VARIABLE: ACHIEVEMENT TESTS, TOTAL COMPOSITE

PREDICTOR VARIABLES of (perceptions/others)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Averag girls
1. Teacher ratings Fall								
Attractive appear		.30*	.33*	.36*		.29*	.31*	.23
Physical ability	.23	.19		.29*				
Work habits	.41**	.27	.36*	.38**	.44**	.35*	.34*	.20
Social virtues		.32 *		.23		.29*		.26
Happy qualities		.38*	.32*	.21		.29*	.25	
Creativity	.43**	.20	.52**		.40**		.42**	
Intrinsic interest	.53**	.41**	.43**	.47**	.60**	.43**	.44**	.28*
Seek stat: acad.	.65**a,s	.09	.36*	.22	.65**a,s	.10	.36*	
Seek stat: social	.41**	.38**	.26	.20	.30*	.26		
Gain affect: peers								
Gain affect: teach	.20							
Spring								
Attractive appear						.20	.33*	
Physical ability								
Work habits					.46**	.34*	.37*	.42**
Social virtues						.26	.28*	.35*
Happy qualities						.27	.39**	.30*
Creativity							.31*	.25
Intrinsic interest					.48**	.36*	.37*	.26
Mental ability					.69**	.69**	.46**	.52**
Seek stat: acad					.49**	.53**f	.30*	.23
Seek stat: social							.29*	
Gain affect: peers								
Gain affect: teach							.24	
2. Teacher Social Distance - Spring								
Teacher liking for child						.20	.39**	.39**
3. Peer nominations Fall								
Attractive appear		.28		.36*		.28	.25	.25
Physical ability				.35*				.24
Work habits	.58**s	.44**	.23	.48**	.63**s	.42**	.18	.37**
Soc.rel.with teach		.28	.27	.31*		.30*	.25	.31*
Mental ability	.56**	.52**	.27	.50**	.57**	.51**	.25	.27
Social virtues						.32*		
Spring								
Attractive appear							.27	.24
Physical ability								
Work habits					.46**	.36*	.35*	.43**
Soc.rel.with teach					.26	.21	.21	.30*
Mental ability					.58**	.46**	.41**	.34*
Social virtues								.23
4. Social Distance Fall								
Liking by same sex		.27	.24	.39**		.29*	.29*	.33*
Liking by opp. sex		.29*		.27		.24		.23
Spring								
Liking by same sex					.23		.33*	.29*
Liking by opp. sex								

See code, page 45.

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performances), and to incorporate this information in such a way that when called upon to identify those who possess the characteristics of successful performance, they do so at a very significant level. High correlations between achievement scores and teacher ratings are particularly noticeable in the ratings of academic type characteristics: work habits, intrinsic interest, creativity, mental ability.

The second interpretation is that academic success has a facilitating effect on how the teacher perceives the child. This is supported when we compare teacher ratings of seeking status academically for the superior boys as compared to other groups. There are marked and significant differences between the correlations. For bright boys, teacher ratings of seeking status academically is much more highly related to the actual achievement than for the average boys or either group of girls. We suggest that teachers expect bright boys to seek academic status more than girls, and when the boys do achieve, teachers relate this achievement to status oriented goals supported by the culture at large. This is a simple restatement of our cultural goal of success through interest and academic achievement. Bright girls are not perceived by the teachers as having the same interest in academic work as boys, nor are they perceived as desiring academic status, although some relationships are significant. Spring scores show a stronger correlation than fall in the average boys between achievement and seeking academic status.

If success in the academic areas is a factor that generalizes to all aspects of how a teacher perceives the child, we might suspect that the teacher will also rate the children who do well academically as having qualities that are not necessarily related to achievement. The correlations between achievement and teacher ratings of physical appearance, physical ability, social virtues, happy qualities, and seeking of social status are generally positive and significant for all groups except the superior boys (Table 28).

We might tentatively hazard an explanation that the teacher generalizes from the child's achievement (girls and average boys) and rates him favorably in most other areas. Teachers trained in recent years have come to expect positive correlation of desirable characteristics. Here we may suspect that the teacher utilizes information that has been taught to him in forming evaluations of the children in his class. We might ask how much we can expect any rating to be free of the general hypothesis about human behavior that exists in the current climate of opinion? If teachers are taught that "research has shown" that achieving children are also physically and socially mature, it should not be surprising that positive correlations are found in our data between measures of achievement and measures of teachers' ratings of physical and social skills? Whether there in fact exists a positive relationship between the achievement measures and the social skills will have to be sought elsewhere, by more objective measures of the latter.

We note that the general halo effect extending to correlations with physical ability is present (but low) in the fall and is not there in the spring. In the fall, when the teacher doesn't "know" the children, it may be he is more susceptible to expectations developed from his training and experience. By the spring he is able to discriminate various aspects of achievement rather than globally to rate his high and low achievers. For girls, however, we see that some of the social characteristics still produce spring relationships. This reflects our cultural expectations that girls must possess social skills as well as academic ones.

We then suspect that the teacher may be a source of variance by which a child evaluates and is evaluated. That is, the teacher's view of the child, based in part on academic success, is related to how well a child does in the various measures of performance in our study. This is the third possible interpretation, and one that is impossible to assess at this point. Does the child do well because the teacher perceives him as doing well, or does the teacher perceive him as doing well because in fact that is what he is doing? An examination of the differences between the average PMA and the superior PMA children discussed above casts some light on this interpretation as reported in Table 28.

The generalization or halo effect is not present to the same extent for superior boys as for the other groups. We would suggest that when superior academic ability is accompanied with superior achievement in boys, the teacher is less subject to halo because the major goal of the classroom is being met by the group from which the teacher most expects it. In girls, when superior ability is consistent with superior achievement, the other cultural expectations become fused and related to the achievement ratings of teachers. These hypotheses suggest that halo effects occur when the goals of a program are multiple, yet the measurement of the goal is singular. Teachers have at their disposal and use, evaluative techniques that are largely academic in nature. Thus, girls are evaluated on largely academic instruments, and if they achieve academic goals, are seen to possess other skills which may or may not be related.

For average boys, where the expectations of the culture are not being met to the same degree as by the superior boys (mean achievement scores lower), the degree to which the child achieves is haloed, or generalized, to the other ratings.

Our data suggest the following hypotheses for future study:

Teacher ratings will:

1. Be useful predictors for superior boys' and girls' academic success.
2. Be related to other non-academic goals for girls and average boys.
3. Be subject to halo effect for all groups where superior academic achievement has not been demonstrated.

Self-concept as predictor of academic success

We not only seek sources of influence on a child's perception of himself as assessed by significant others, but seek to understand the frame of reference the child and significant others use as an anchor for their evaluations. It is suggested above that the teacher, as an agent of the culture, uses academic success as his anchor when rating. Do the peers and the child rating himself use similar anchors?

All boys and all girls. Consistent with our position, there appears in the correlational matrices what can be named an academic syndrome; that is, a number of teacher, peer and self-rating variables which are academic in nature are significantly correlated with academic achievement scores. The self-concept measures of mental ability, work habits, school subjects, and academic are all positively related to the composite SRA scores in the fall when the all boys and all girls correlations are examined. Self-concept mental ability and self-concept academic are positively related for boys in the tests given in spring. The same relationships hold in general for all of the achievement measures (work-study skills, reading composite and arithmetic). These findings are summarized in the table following:

Table 29.

Correlation of self-concept and achievement tests total composite

	FALL SRA Composite		SPRING Composite	
	All boys	All girls	All boys	All girls
Number	95	100	95	100
Self-concept mental ability	.32**	.28**	.34**	-
Self-concept work habits	.29**	.26**	-	-
Self-concept school subjects	.24*	.25*	-	-
Self-concept academic	.30**	.29**	.31**	-

The table reveals generally low but significantly positive relationships for boys and girls in the fall and for boys only in the spring. One would expect larger correlations for support of the view that academic achievement is a major channel by which the child attains an adequate self-concept. However, if we consider that the height of self-concept alone is not an adequate definition of self-esteem and pursuit of self-esteem is our primary purpose, then one would predict that correlations of moderate size might reflect feelings of self-esteem. In this respect, our correlations approach a level where we might expect the relationships of the self-concept measures of our academic syndrome and the various measures of achievement to reveal the facilitating effect of academic success upon self-concept. Similarly, adequate self-concept can predict achievement. However, we are then called upon to explain why these relationships only appear in the fall for girls and in only two areas for boys in spring. Our interpretation, at this early state, is that while succeeding in school is facilitating, and provides a frame of reference from which the self may be assessed, in the spring the girls are now using other performances upon which their self-concept is in large part built. The fall academic achievements may provide part of the structure upon which the view of the self is based, a cornerstone if you will, that is not always perceived when one views the total structure. In the spring, self-concept measures are not adequate predictors of academic success.

For average girls we note in Table 27 that self-concept scores are related to composite achievement. However, in the spring, satisfaction is negatively related to achievement. It is suggested that for these girls of lower ability and achievement to succeed in the fall requires a positive attitude towards what might be accomplished, but in the spring these girls now have adequate information to rate themselves against superior achieving girls. There is a relationship between their dissatisfaction with their achievement and achievement scores.

Superior boys end up in the spring expressing some satisfaction with their achievement, shown in the small positive correlation. Too much should not be made of these small positive correlations; however, the uniqueness of each group's set of correlations suggests different frames of references for viewing the self as able to successfully master the major goal of the school, academic achievement.

Liking for other children

Superior boys' liking for same sex is negatively correlated with achievement tests, total composite in the fall (r = -.18, Table 27), while superior girls is significantly positively correlated (r = .41). This difference between the two r's is significant beyond the .01 level.

These results are consistent with the perception that superior boys who achieve do not focus on social relations, whereas superior girls' achievement is related to their social preferences. Academic achievement, then, is related to social needs and strivings for the superior girl achiever.

An interesting reversal occurs among our groups in the spring, when liking for the same and opposite sex is negatively related to total composite achievement for average boys, and positively related for average girls. Those average boys and girls who follow the achievement patterns of the superior ability peers now express similar social patterns to the superior group.

The peer nominations as predictors

Knowing the stability of the fall-spring achievement scores, it is assumed that the group per se is relatively stable in terms of academic achievement. In addition, except for a few children who move in or out of the class, the child's academic reputation is known to the peer group. Thus, the peers' perception of a classmate's ability is based on relatively stable achievement and prior contact in the other classrooms before this rating. The peer has less information than the teacher, but we predict he knows it better. We have seen reflected in both teacher and self-rating the influence of an academic syndrome.

Our interest in this section lies in the relationship of the achievement data and the peer ratings. The findings are shown in Table 28. Peer nominations for mental ability and work habits correlate significantly with achievement for all groups except, again, the superior girls.

The most striking finding is the size of the correlations between the achievement measures and the peer ratings, considering the size of our sample. These results are similar for reading composite, arithmetic composite, and work-study skills (see Appendix tables).

However, most teachers will not be surprised that the children's peers are accurate assessors of their achievement. If, in addition, we consider that the peers are not in possession of their classmates' achievement and aptitude test scores, we note that they are as accurate in their assessment as the teachers, while the peers must operate with less "objective" data. Our first explanation, then, is similar to the explanation offered for the correlations of the teacher ratings; that is, children who do well are rated as having skills related to the academic areas. To be sure, not all of the variance is accounted for, and one can imagine that many high-achieving children are not rated high by their peers. When we reflect that these correlations are the result of 195 children rating 195 children and compare the children's rating ability with that of others who base their judgments on observations, one feels that whatever the criterion the peers use to assess those skills related to achievement, most are able to do so with a relatively high degree of effectiveness.

We are faced at this point with the same problem that we were confronted with in the interpretation of the teacher data. Are these correlations a result of accurate perceptions on the part of the peers, or is there intertwined within the correlations of peer ratings and achievement data a reflection of what the peers value or what the teacher and culture value? These findings are not as strong in the self-concept, or even the teacher ratings as they are in the peer ratings. Do peers control the sanctions more than the teacher? If the peers value achievement as the teacher does, we would suspect that their ratings of their peers in other non-academic areas to be equally related to achievement. Table 28 also shows correlations with peer nominations for attractive appearance, physical ability, social relations with teacher, and social virtues.

We can see from the table that the relationships, although significant and positive are small and are found more frequently for girls and average boys.

Theoretically we conceive of the traits as existing in the child and that traits are reflected in performance. Our major distinction is that the trait may be in service of goals not specifically included in the criterion performance. Specifically, bright boys and girls (those who score high on the aptitude test) may use the traits that enable them to obtain these high scores to accomplish other related and perhaps more valued peer goals. First, achievement test scores are a performance criterion of intelligence that may be seen as an end in itself. That is, doing well in school brings many kinds of rewards from teachers, parents, and peers, as well as the society at large. Or at least the current folk lore would hold that doing well in school is a desirable goal for all to achieve. Secondly, doing well in school in achievement situations (test, reading groups, oral reports, etc.) may be facilitating in that other desirable "rewards" accompany success in this area. A look back at Table 28 shows that social relations with the teacher, and social relations with the same sex and with the opposite sex as judged by peers are positively related to achievement measures. Again, we note that this is particularly true for girls. Conceivably, getting along with the teacher should be related to achievement. We wonder why the correlations are not higher until we remember that the teachers in our sample hold more than the achievement goal as desirable aims of education. However, as we have seen, the peers perceive these relationships to be "true" for girls and not so much so for boys. We note that in the spring, liking by other girls and attractive appearance are positively related to achievement for girls. These perceptions of the peers may indicate the beginning of what has been stated by Coleman and others; that is, girls at the upper elementary level are faced with a double-bind situation. They are pressured to achieve and are pressured to develop feminine, sociable qualities. These qualities are perhaps best expressed by the construct of "expressive qualities" in Parsons' (1955) system.

But we wonder, at this point, as to who holds the power in developing attitudes about the self and others, the teachers or the peers, and the relationship to school achievement. We note in Table 28, when comparing ability groups, that peers, similar to teachers, are subject to stimulus generalization more with ratings of average girls and average boys, while superior boys' and girls' ratings are only significant in academic areas.

Halo refers to both positive and negative evaluations, and we see in these correlations the rejection of the low achiever on many counts in relation to his failure to achieve. Children pressed in an environment where achievement is prized by all significant others are also perceived as less attractive, to have poorer relationships with teacher, and fewer traits that make getting along with others a smooth and comfortable process.

When we remember the high intercorrelations of fall and spring achievement tests, and the fact of the stimulus generalization for average boys and girls to non-academic areas, one wonders how other goals can be achieved in the classroom apart from academic success.

Liking by other children

At this point, the peers' ratings of liking by the same and opposite sex are relevant (Table 28). In the fall all groups except superior boys' ratings of liking by the same sex are related to achievement. Acceptance by peers appears to be related to how well a child performs. For superior boys, the mean rating is significantly higher than for average boys (Table B-2, appendix); these boys are liked as a group regardless of the height of achievement scores.

Peer ratings as predictors of academic success are useful indicators of a child's accomplishments but do not identify the superior boy by correlational studies. Mean score ratings of liking appear to be useful predictors for the superior boy.

Our general hypothesis, based on our findings reported above, is that girls are seeking satisfaction of social needs, and view the achievement syndrome as a partial solution to that answer. If this were a power motive (that is, wanting control of others and control of the social situation) we would expect that the means of the teacher ratings for girls would be higher than that of boys of seeking status social. Consistent with the hypothesis developed this far, we would predict that girls, although having positive relationships with social status and achievement, would be perceived as a group having lower desire or need, and hence show significantly lower means of this variable. This is the case in our data; the mean for all boys is 2.64 and for girls 2.33 (sigmas 1.01 and 1.00 respectively), a difference

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significant at the .001 level (Table B-1, appendix). The girls have significantly higher means on teacher ratings of work habits, gain affection teacher fall and spring. They have significantly higher means than boys on the peer rating measures of (1) social relations teacher; (2) social virtues; and (3) school subjects. Boys have higher means when rated by teachers on seek status social, and the peer rating of physical ability.

Complementing our hypothesis that girls seek social relationships and not social power, we would as a corollary state that boys would be more interested in controlling the status sanctions of social relations. As we have stated above, boys have significantly higher means as rated by teachers on seeking status socially.

Need achievement and need affiliation

All boys and all girls. Table 30 following shows low but positively significant relationships of need achievement and arithmetic in the fall for boys and girls. In the spring need achievement is significantly related to reading, arithmetic and work study skills for boys and work study skills for girls. This finding generally supports our academic syndrome for boys. That is, feelings expressed through a projective technique reflecting any underlying motivation to achieve is positively related to three achievement areas for boys. The girl who successfully achieves is not only rated by teachers and peers as possessing academic talents but is seen as possessing qualities of a social or interpersonal nature. Correlations for girls are positive between academic achievement and need affiliation, rather than need achievement. Results for groups formed on ability as well as sex are shown in Table 27.

Table 30.

Correlation of Academic Achievement and TAT

	FALL							
	Composite		Reading		Arithmetic		Work-study	
	All boys	All girls	All boys	All girls	All boys	All girls	All boys	All girls
Number	95	100	95	100	95	100	95	100
TAT								
Need achievement	-	-	-	-	25*	23*	-	-
Need affiliation	-	31**	-	27**	-	27**	-	28**
Need power	-	-	-	-	-	-	-	-
	SPRING							
Need achievement	-	-	27**	-	20*	-	23*	21*
Need affiliation	-	31**	-	32**	-	29**	-	26**
Need power	-	-	-	-	-	-	-	-

We begin to see a picture of our upper-grade boy and upper-grade girl. The boy who successfully achieves in school subjects does so in most academic areas and is rated by teachers and peers as a good student in those areas related to these academic pursuits. He also expresses fantasy themes of achievement as expressed in the correlation of need achievement and achievement tests. The girl who successfully achieves is not only rated as possessing academic talents but is seen as possessing qualities of a social or interpersonal nature, and affiliative needs. Academic achievement may be used as instrumental to affiliation.

Creativity tests

There are positive relationships between our creativity measures and the achievement tests for all groups except superior girls in the spring (Table 27).

Of interest at this point in our analysis is that the achievement measures share much of the variance, for three groups of children, with Guilford creativity measures. Current in the literature is a discussion of the need for tests that measure both convergent and divergent thinking, or open and closed systems in H. H. Anderson's (1961) terminology. To Anderson, the open system is a stimulating system of relationships which accepts uniqueness in perception and in thinking. The closed system encourages originality, experimentation, initiative and invention. Where the closed system would call for fixed answer problem-solving, the open system would encourage new, inventive, creative solutions to problems.

One major problem is inherent in the discussion above. Problem-solving may be either open or closed dependent upon the method the teacher uses to present the problem (some new curricula deal directly with this issue). For example, a teacher may present the information leading to the development of the concept of the water cycle in such a way that the child may structure the facts and independently make the generalization called water cycle, or the teacher may present the facts in such a way that the child is told and learns the generalization (water cycle). What may be already known by the culture can be rediscovered by the individual learner and thus be classified as an open system. If children are encouraged to discover for themselves (Thelen, 1960; Bruner, 1960), their solutions, while not creative for the society, may be creative for the individual. Any solution that is discovered by the child is a creative venture for that child. The writers in the field of creativity hypothesize that involving children in such inquiry will lead to creative products on the part of the child. Not only will the child master the content of the subject, but he will retain the generalizations and facts for a longer time and transfer the understandings to new content areas at a later date. This, in essence, is the message of the Woods Hole Conference reported in Bruner's The Process of Education (1960).

However, at the present time we have little data to support the supposition that independent discovery of generalizations is superior to the teacher-directed learning of generalizations. The data from transfer of training supports the superiority of learning generalizations over the learning of facts, but does not offer evidence to support the superiority of the child's independent mastery as the desirable means of learning, no matter how logical this approach may appear to curriculum planners. The teachers in our study lean in the direction of having their students engage in problem-solving and encourage creative thinking. This is clearly expressed in the district's curriculum guides and teaching supplements.

Hence, it is not too surprising that the divergent tests of Guilford and the convergent tests of achievement share components of variance.*

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*The different results from the superior girls' group will be discussed later.

We would postulate that these findings indicate that the underlying trait or skills that are reflected in the correlations of the divergent-convergent tests can be used in a variety of directions. That is to say that a child may use his thinking processes (the pre-consious in Kubie's (1961) system) in the service of convergent tasks or divergent tasks. We would postulate that while the tasks are of a different nature they do not necessarily stem from different traits. The fact that bright children may not engage in creative solutions is not to say that the talent they possess cannot be used in creative pursuits.

Summary

Superior boys and average boys

The significant relationships for superior boys fall clearly into what we have called the academic syndrome; that is, teachers and peers see these boys as possessing the habits, interests, skills and abilities in the academic areas. Equally, the superior boys do achieve and express positive attitudes in relation to academic areas. The results are clear and need little amplification. These boys do well and are perceived and perceive themselves as doing well. Other qualities are not significantly related for these boys. They are not seen as more attractive, happier, better physically, nor is their achievement related to their social relations. They fit the mold of the high achieving child. In the spring, they are the only group whose task-oriented work is related to achievement. That is, though over seventy-five per cent of the time of all children is spent on task-oriented work, it is only for this one group that the work is realistically oriented in a purposeful way. One wonders here if the tasks the teacher set in these classrooms are designed for the superior boys. All of the children in our sample are "working" and doing what is required, yet it is only in the case of the superior boys that what they do is relevant, as judged by the payoff of achievement test scores. Stern, Stein, and Bloom (1956) have shown that the high school student who attends to a discussion and later rates himself as having listened and thought about the problem at hand is the one who achieves as rated by the instructor (r = .65). Perhaps one group of children in the class, the high ability boys, transact with the assignment in such a way to understand and think with the ideas which the teacher has postulated are related to achievement.

Is the teacher more skilled at planning experiences for the superior boy? We know that the teachers in our research project group children by ability for many academic areas. Is the seventy-five per cent of the time spent in work the lower limit of what is required to master the content, and does the extra time these boys spend in work result in greater achievement? The means for each group on task-oriented work do not vary significantly (77.87, 75.94, 77.02, 74.35 respectively), so this doesn't seem to be the case. However, we do find that girls spend significantly more time in social work activity than do boys.

If we accept the hypothesis that the goal of the school is academic achievement, these superior boys are the models of the achievement syndrome. As expressed in their attitudes, they work, achieve, and express satisfaction with themselves as well as accepting the achievement goal. As standards of what is desirable behavior and achievement, perhaps it is to this group that the teacher looks for feedback. It is unrealistic to assume that teachers are not receiving information from children, from the questions children ask and answer, from work papers, their quiet or noisy behavior, ad infinitum. Why, then, do teachers require and plan activities that appear unrelated to the achievement success of the average boys and girls, unless for some significant group these procedures work? In our culture the male role, particularly the young man, is held to be the ideal. Not only is he the ideal of the culture, but the male role is looked upon with envy for the privileges and status his maleness commands (Brown, 1958). Here, then, may be the anchor or frame of reference upon which the teacher bases his hypothesis about desirable educational processes. He plans activities of a nature that suit the superior boy and looks for feedback from the superior boy as a behavioral sign that all is going well.

When we look at teachers' social relations with superior boys, as rated by peers, we see that there is no significant relationship to achievement. May this not mean that, regardless of how high the superior boy's achievement is, the children believe that the teacher likes him; whereas for the other ability groups the teacher's liking is positively related to achievement? The teacher is not skilled at differentiating among the achievement heights of superior boys because, generally speaking, they are doing well. The mean of actual teacher liking (reported by the teacher) for superior boys is 7.81 and for average boys, 6.33, a significant difference beyond the .001 level. Yet achievement is correlated with teacher liking for average boys and not for superior boys. Teacher transactions with superior and average children will be discussed further in connection with the time sampling observations of teacher behavior, Chapter X.

For boys of average ability, achievement is more difficult. Those who achieve well relative to their ability are liked by other children and by the teacher; those who do not achieve are generally not liked. The perceptions of teacher and peers appear to generalize more in relation to achievement for these boys than for the superior boys, i.e., if they achieve fairly well they are seen as attractive in appearance, and happy in disposition as well as showing favorable academic characteristics. The seeking of status through academic means, however, is not initially seen as a motive for their achievement, although it becomes so in the spring.

Superior girls and average girls

The superior girl pursues her own goals in spite of what the school may deem important. Achievement is not nearly as highly correlated with aptitude (PMA) as it is for other groups. High achieving girls are not so much seen as seeking academic or social status through achievement. Rather, they appear to show achievement as instrumental to social and affiliative needs, and in association with much liking for other children. Those superior girls who are creative according to test results do not generally achieve better than those who are not. The creativity is not channeled into achievement as it is for other groups.

These reults are based on fifth and sixth grade children and appear to represent a start of the strong values placed on social relationships found by Coleman (1962) for high school girls. It will be interesting to see whether this picture is the same when children at younger elementary school ages are studied.

The girl of average ability, who must work harder to reach an adequate level of achievement, shows quite a different set of correlates in connection with achievement. PMA mental ability and creativity test scores are both good predictors of achievement, but status seeking in connection with achievement is not at all prominent. While in the fall the better achieving average girls show better self-concepts than the lesser achieving, by spring the average girl who is achieving well (for her) is dissatisfied with her performance. Perhaps she is comparing herself to girls of higher native ability.

In summary, the tested achievement of children at upper elementary grade level appears to represent responses of quite different sorts in boys and girls, and the level of their aptitude conditions the patterning of the other child characteristics with which achievement is associated. Further, the perceptions by others of the high achieving boy or girl are somewhat different. The results have been interpreted in terms of cultural values for academic achievement in children of these ages.

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CHAPTER VIII

ATTITUDES TOWARD SCHOOL*

Introduction

Each individual has a model of the world on the basis of which he organizes and interprets his experience and subsequently acts. Attitudes are components of such a cognitive model. Allport (1935) defined an attitude as "a mental and neural state of readiness, organized through experience, extending a directive or dynamic influence upon the individual's response to all objects and situations with which it is related." Attitudes are further generally thought of as reasonably enduring or stable, and for the most part, conscious and internally consistent.

The key mediating role of attitudes makes them a significant object for our study of those characteristics of elementary school children which influence (as an independent variable) and are influenced (as a dependent variable) by the school experience. Of course we cannot study the attitudes directly. Rather we must infer attitudes from a set of more or less adequate operations. In the present study we have selected as our operation for measuring attitudes a set of pencil-and-paper ratings made by each student about various aspects of his school experience. Our hope is that a study of the manner in which these attitudinal ratings relate to one another and to other variables in our study will provide us with useful information about the attitudinal models with which our students function. Throughout the remainder of our discussion we shall treat our data as if they were isomorphic to the actual attitudes and we shall thus refer to them as "attitudes." The reader should keep critically in mind the above underlying assumption.

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*The plan for this part of the research and most of the data analysis were the work of Richard Alpert and Sandra Wood Scarv.

Method

The instrument which we administered, entitled "Attitudes Towards School Subjects and Classroom Activities," is composed of 80 items developed on an a priori basis. These items represent some general categories (see manual in Appendix A) such as "The Three R's," "Intensive Study," and "Working with Others" which cover the total school experience.

For each item each student checked a point on a five-point scale which most closely approximated his feelings. The two end points and the middle point of the scales were labeled: "Like very much," "Okay, but not wild about it," and "Dislike very much." This questionnaire provided us with 80 responses for each of our subjects. The instrument was administered in both the fall and the spring so that for each subject we have 160 responses.

Treatment of Data

Our first analysis was based on those of our a priori scales composed of groupings of items in which the item intercorrelations were sufficiently high to suggest that the scales were meaningful ones. We shall consider in this section three such scales: "Academic attitudes" composed of 58 items, "Intensive study" composed of seven items, and "Overall mean," the average score for all 80 items. We have hypothesized and tested the relationship between scores for our subjects for these three scales (fall and spring administrations) and a number of other relevant variables which are described in Chapter III.

The second method of data analysis involved factor analyses of 68 of the items from the attitude questionnaire, and correlation of factor scores with the predictor variables. The results from the a priori scales analysis will be reported first.

Correlates of A Priori Scales

Self-concept.

Generally we expected a significant positive relationship between attitudes and the various areas of the students' self-concepts. All of our specific predictions with regard to the relation of specific components of the self-concept to attitude measures were in the same direction. In addition we predicted that the correlation would be higher with those areas of the self-concept most intimately linked to the school experiences.

An examination of the intercorrelations (Tables 31, 32, and 33) provides general support for our original hypothesis of a positive relationship between the various components of the self-concept and attitudes.

The positive relationships are most consistent for the superior boys. For the other groups there are some insignificant correlations in fall or spring. Earlier (Chapter III, p. 35) it was shown that the superior boys show strongly stable fall-spring correlations on attitudes, with lesser stability for the other groups, particularly the average boys. Similarly for stability of self-concept (Chapter IV, Table 2); overall

Table 31. TARGET VARIABLE: ATTITUDES ACADEMIC

PREDICTOR VARIABLES (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall								
Happy qualities	.25	.09	.43**	.43**		.27	.22	
Overall mean	.29* a	-.17 s	.33*	.43**	.29*			
" satisfact	.51**	.39**	.47**	.62**	.55**	.51**	.40**	.52**
" improve	.31*			.42**	.36*		.24	.21
Spring								
Happy qualities					.27	.43**f	.33*	
Overall mean					.30*	.48**f	.34*	
" satisfact					.39**	.47**	.45**	.26 f
" improve					.54**	.38**		.00 f
2. Social relations								
Fall								
Liking for same sex	.33*	.35*			.33* a	-.08	.27	
Liking for opp sex	.03 a,s	.46**	.44**			.21	.35*	
Spring								
Liking for same sex					.29*		.27	
Liking for opp sex					.21	.35*	.27	
3. Classroom behav'r								
Fall								
Task oriented work	-.21a,s	.22	.33*					
Spring								
Task oriented work					-.09 a	.33*	.21	
4. Achievement tests								
Fall								
Total composite	.04				.19 a	-.21		
Reading "	-.04							
Work study "						-.24 s	.20	.18
Arithmetic "					.31* a	-.23		
Spring								
Total composite					.24 f			
Reading "					.26 f			
Work study "								
Arithmetic "					.22 a	-.18		
5. Attitudes - Fall								
Academic					.70**a	.24	.53**	.44**
Intensive study	.69**	.73**	.85**	.76**	.49**		.55**	.40**
Overall mean	.86**	.85**	.84**	.89**	.61**a	.20	.41**	.40**
Spring								
Academic								
Intensive study					.79**	.84**	.69**	.82**
Overall mean					.94**	.91**	.88**	.81**
6. Creativity - Winter								
Plot originality	.33*		.41**a	-.15			.31* a	-.34*
Things fluency	.15 a	-.29*			.38**a	-.12		
Things unusual	.13 a	-.37*			.19			-.23
Object synthesis			.23				.24 a	-.16
7. Primary mental abils. - Winter								
Total composite			.24		.23		.31*	
Verbal	.08 a	-.35*				-.20		
Space								
Reasoning		-.20						
Number	.20			.24	.50**a	-.08		
8. Motives from TAT								
Winter								
Need achievement	.24							-.27
Need affiliation			.23					
Need power	-.21		.26					

Table 32 TARGET VARIABLE: ATTITUDES - INTENSIVE STUDY

PREDICTOR VARIABLES (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall								
Happy qualities		.20	.39**	.40**	.21	.28	.21	
Overall mean	.25	.05 s	.34*	.47**	.26		.22	.25
" satisfact	.51**	.47**	.39**	.57**	.47**	.42**	.13 a	.61**
" improve	.20			.29*	.25			.31*
Spring								
Happy qualities					.27	.32*	.32*	
Overall mean					.35*	.38**	.26	.13 f
" satisfact					.31*	.36*		.37**
" improve					.43**	.33*		
2. Social relations								
Fall								
Liking for same sex	.25						.37**	
Liking for opp sex		.22	.43**				.30*	
Spring								
Liking for same sex								
Liking for opp sex						.27		
3. Classroom behav'r								
Fall								
Task oriented work		.20	.24		.20			
Spring								
Task oriented work					-.15 a	.28*		
4. Achievement tests								
Fall								
Total composite	-.06				.27		.20	.20
Reading "	-.11						.21	
Work study "	-.09						.35*	.23
Arithmetic "				.27	.34*a	-.16		
Spring								
Total composite					.25 f			
Reading "					.28 f		.27	
Work study "					.19 f		.26	
Arithmetic "								
5. Attitudes - Fall								
Academic	.69**	.73**	.85**	.76**	.55**a	.13	.36*	.39**
Intensive study					.62**a	.16	.58**	.39**
Overall mean	.64**	.67**	.76**	.67**	.51**		.27	.31*
Spring								
Academic					.79**	.84**	.69**	.82**
Intensive study								
Overall mean					.75**	.82**	.68**	.67**
6. Creativity - Winter								
Plot originality			.32*a	-.10			.28	
Things fluency					.25			
Things unusual		-.19					.29*	
Object synthesis								
7. Primary mental abils. - Winter								
Total composite					.24		.29*	
Verbal		-.19	.28				.31*	
Space				-.25				
Reasoning		-.30*					.32*	
Number				.21	.41**a,s	-.00	-.02	
8. Motives from TAT								
Winter								
Need achievement								
Need affiliation						-.07 s		.34*
Need power	-.21 s		.28*					

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Table 33 TARGET VARIABLE: ATTITUDES - OVERALL MEAN

PREDICTOR VARIABLES (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall								
Happy qualities		.11	.31*		.22	.28		.20
Overall mean		-.16	.30*		.30*			.21
" satisfact	.48**	.44**	.43**	.45**	.61**s	.47**	.25	.44**
" improve	.10			.25	.30*		.21	
Spring								
Happy qualities					.25	.40**f	.30*	
Overall mean					.23	.45**f	.33*	
" satisfact					.37*	.48**	.30*	
" improve					.54**s, f	.36* s	.09	-.07
2. Social relations								
Fall								
Liking for same sex	.27	.34*			.34*		.21	.23
Liking for opp sex		.43**	.26			.31*	.33*	.23
Spring								
Liking for same sex					.29*	.21		
Liking for opp sex					.24	.40**	-.08 f	
3. Classroom behav'r								
Fall								
Task oriented work	-.15 s	.22	.43**a	-.12				
Spring								
Task oriented work						.25		
4. Achievement tests								
Fall								
Total composite	.02					-.20		
Reading "	-.13							
Work study "						-.20 s		.22
Arithmetic "					.27 a	-.21		
Spring								
Total composite					.25 f			
Reading "					.27 f			
Work study "								
Arithmetic "					.21			
5. Attitudes - Fall								
Academic	.86**	.85**	.84**	.89**	.64**a	.24	.48**	.50**
Intensive study	.64**	.67**	.76**	.67**	.46**	.19	.56**	.42**
Overall mean					.53**	.23	.39**	.50**
Spring								
Academic					.94**	.91**	.88**	.81**
Intensive study					.75**	.82**	.68**	.67**
Overall mean								
6. Creativity - Winter								
Plot originality			.19 a	-.29*		.07 s	.20 a	-.34*
Things fluency		-.25			.40**a, s	-.13	-.10	
Things unusual		-.37**						-.21
Object synthesis							.22	
7. Primary mental abils. - Winter								
Total composite			.20		.20		.28*	
Verbal		-.27	.24			-.23	.21	
Space				-.20				
Reasoning								
Number				.29*	.42**a	.00		.27
8. Motives from TAT								
Winter								
Need achievement	.27							-.20
Need affiliation								.21
Need power			.22					.25

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mean self-concept is correlated (fall-spring) .67 in the superior boys' group, and .29 in the average boys, a significant difference.

Further examination of Tables 31, 32, and 33 indicates how well self-concept scores from the fall predict attitudes in the spring. The overall picture is again consistent, indicating good predictive power in this direction. These data therefore lend considerable support to a picture of a stable positive relationship between self-concept and attitudes.

The relationship between attitudes and the two measures, improvement and satisfaction, shows that boys who have positive attitudes toward academic subjects feel in the fall that they will improve and indeed feel in the spring that they have improved. They are also more satisfied with their performance in general. Earlier chapters have pointed out the apparent conflict about academic pursuits aroused in some girls of this sample in the spring of the year.

Because the three attitude scales are highly correlated with one another in both fall and spring we might expect that the relationships between each scale and other variables would run parallel. Scanning the tables above indeed demonstrates this supposition, for there are no major deviations between the ways in which the three attitude scales relate to self-concept. Henceforth, therefore, we shall only comment on separate scales when relationships to some variable significantly differs from that of the others.

Social relations.

Our general hypothesis for social relations is that students with positive attitudes toward academic subjects will show favorable relations toward their peers. This relationship may not be too high, however, because psoitive attitudes toward school subjects could serve as part of a defense increasing social distance from peers.

The general hypothesis finds support (Tables 31, 32, 33, 34), that is, liking for and being liked by one's peers is positively related to positive academic attitudes. A further general impression from these data is that for superior boys, being liked by and liking the same sex is more important (insofar as relationship to attitudes), while for the girls and average boys being liked by the opposite sex comes into the picture.

Classroom behavior.

We hypothesize that students with highly positive academic attitudes will be more intent on their academic work whether it be alone or with other students. Tables 31, 32, and 33 indicate that this is true for the bright girls, i.e., these girls show strong positive correlations between favorable attitudes and frequency of task oriented work, in the fall. By spring the correlations drop.

Achievement test.

We would expect that students who are achievers would have more positive attitudes toward school subjects than those who are not. The findings in this area (Tables 31, 32, 33) are disappointing. Only for the superior boys are there consistent positive relations, and most of these are not significant. It is interesting to speculate about the trend, in the average boys, toward poorer achievement with more favorable attitudes. This suggests a defensive reaction in these boys whose achievement cannot generally be very good in any case.

Creativity.

Getzels and Jackson (1962) and Torrance (1962) have found academic achievement surprisingly good in children who make high scores on tests of creativity but lower scores on mental ability tests. The present data show favorable academic attitudes positively associated with creativity in the boys and girls of superior mental ability. In the average boys and girls groups, the correlations are negative, and there are a number of significant differences between the ability groups. These findings can mean that bright children who are also "creative" enjoy many things about school, or, turning the coin, that positive attitudes toward school facilitate the expression of originality, fluency, and flexibility among the bright but somehow interfere in the children of average ability. The discussion of the factor scores, later in the chapter, clarifies the meaning of creativity in relation to attitudes.

Primary mental abilities.

There is a curious relationship here in the superior boys between number ability and favorable attitudes. Among the superior girls, those who are brighter (composite PMA) hold more positive attitudes.

Motives from TAT.

From Tables 31, 32 and 33, we see that there is no consistent relationship among any of these measures with high attitude scores. For the average girls, the significant correlation of .34 between attitudes toward intensive study and need affiliation supports the idea advanced earlier that attitudes toward hard work can serve instrumentally, in these girls, to win liking and satisfy affiliative needs.

Teacher ratings.

Our general hypothesis states that there is a significant positive correlation between students' school attitudes and the teachers' ratings of the students. This hypothesis seems reasonable for interpreting a relationship as causal in either direction, i.e., either (a) students who like school are rated highly by their teachers, or (b) when teachers think highly of students, the students hold positive attitudes toward their school experience. Unlike self-concept, however, the teacher ratings are measured independently of the child. Therefore, because of limited communication opportunities and initial perceptual ambiguity, it is reasonable to expect that student attitudes and teacher ratings will be more highly related in the spring when student and teacher have had ample opportunity to get in tune with one another.

Although it might be possible to make differential predictions across teacher rating scales, we anticipate that the general positive relationship will override these differences.

A study of Table 34 indicates that in general the teachers' ratings are related to students' attitudes. These relationships are generally higher in the spring than in the fall, and, in fact, the teacher ratings in the fall are more highly related to spring attitudes than to fall attitudes. This would seem to suggest that the teachers may have influenced the students' attitudes by their own feelings about the students. Again the relations are clearest for the superior boys, and for the average girls.

Table 34 TARGET VARIABLE: ATTITUDES - OVERALL MEAN

PREDICTOR VARIABLES ↓ of (perceptions/others	Fall scores Superior boys	Average boys	Superior girls	Average girls	Spring scores Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings Fall								
Attractive appear								
Physical ability				.08	.29*s	-.08 s	-.24 a	.33*
Work habits						-.13 s	.34*	.35*
Social virtues	.21				.29*			.26
Happy qualities				.25	.22	-.01 s		.41**
Creativity	-.30*a	.14	-.22					.41**
Intrinsic interest				.22	.36*			.37**
Seek stat: acad				-.05	.30*			.22
Seek stat: social	.20						-.24	
Gain affect: peers	.40**a,s	-.07	-.27					
Gain affect: teach		.33*			.11 s		-.32*a	.15
Spring								
Attractive appear								
Physical ability					.20	-.02 s	-.08 a	.39**f
Work habits							.24	
Social virtues					.30*			.21
Happy qualities								
Creativity								
Intrinsic interest					.23		.21	.35*
Mental ability					.21		.27	.33*
Seek stat: acad					.37*	.22		.33*f
Seek stat: social								.27
Gain affect: peers						.42**f		
Gain affect: teach						.23	-.22 a	.19
2. Teacher Social Distance - Spring								
Teacher liking for child								
3. Peer nominations Fall								
Attractive appear		.21		.04	.28 a	-.22 s		.25
Physical ability				.03				.20
Work habits	-.02				.23			
Soc.rel.with teach	-.07				.22			
Mental ability			.22		.28 a	-.13 s		.39**
Social virtues	-.05				.23		.28	
Spring								
Attractive appear					.22 a	-.21 s,f	-.14 a	.29*f
Physical ability							-.14 a	.32*f
Work habits					.22 f			.27
Soc.rel.with teach					.20 f			
Mental ability					.22			.29*
Social virtues					.24 f			
4. Social Distance Fall								
Liking by same sex					.34*			
Liking by opp sex		.22	.31*		.19		.25	.29*
Spring								
Liking by same sex								
Liking by opp sex							.22	

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Peer nominations.

Here again theorizing an integrated evaluative school syndrome, we might expect a general positive relationship between students' attitudes towards school and their social reputation, i.e., the way in which they are seen by their peers. As with the teacher rating data it is reasonable to expect that the relationships will be higher in the spring than in the fall.

A review of Table 34 indicates that there is no relationship in the fall, and in the same two groups (superior boys and average girls) there is a positive relationship between social reputation and attitudes in the spring. For these two groups there are significant changes from fall to spring toward positive prediction of attitudes from the peers' nominations. One is tempted to speculate that conflict for girls over being too outstanding academically is more severe for the superior than for the average girls. The superior girls, being able intellectually, may really come into (undesired?) competition with the bright boys if they let themselves go. For the girls of average ability, this is not a likely possibility. They can act the good, hard-working student and still maintain a respectably subordinate feminine role in the classroom interaction.

Factor Analyses: Items with Positive and Negative Loadings.

Our second method of treating our data involved the preparation of factor analyses of items used in the attitude questionnaire. Our two factor analyses, one for boys and one for girls, utilized 68 items from the 80 item Attitudes Toward School Subjects and Classroom Activities Questionnaire. We were limited to 68 items by the input capacity of our IBM program. From our total group of items, therefore, we selected those items which had considerable inter-subject variability. From that pool of items we then selected those items which would assure us as wide a range as possible of attitudinal areas to intercorrelate. Because the attitude scale had been originally designed on the basis of a priori groupings of items into attitude areas such as self-expression, three R's, helping, assuming public position, silent participation, work with others, liking limits, liking permissiveness, and independent interests, we were careful to include items which had originally been included in each of these areas. The two factor analyses, then, which utilized the same 68 items, were based on N's of 100 girls and 95 boys. The following is a discussion of each of the major factors which emerged from the analyses. We will study the boys first.

Boys.

Factor I: Interest in efficiency. From Table 35, we see items which have a loading on this factor of .57 or above (.57 to .74). The items all have positive loadings and would seem to reflect general thoughtfulness or depth of thought as a category. The factor is concerned with the values of intellectual endeavor, structure and efficiency. In addition there are items which suggest satisfaction from working in a social setting. This factor, then, would seem to reflect intrinsic interest in school material, and curiosity or a desire to seek knowledge. The knowledge can be obtained from the speaker, teacher, classmates or reading. Thus boys who have a high score on this factor report gaining

Table 35. Attitudes: Loadings of items on Boys' Factor I

Item number		Loadings
42	Listen-guest speaker	.74
24	Going deeply into school work	.73
41	Listen-classmates explaining	.72
40	Listen-teacher explaining	.66
25	Organizing and writing reports	.64
37	Responsible and special jobs	.63
34	Giving reports	.61
9	Handwriting usage	.60
23	Social studies research reading	.60
26	Long periods thorough work	.60
38	Listening to discussions	.60
22	Science research reading	.59
45	Being in programs	.59
5	Health problems	.58
20	Social studies construction	.58
53	Teacher decide period length	.58
58	Participate in teacher led discussions	.58
6	Spelling workbook	.57
44	Being in plays	.57
59	Participate in student led discussion	.57

satisfaction from looking for new knowledge to every aspect of their environment be it social or non-social.

The items which do not fit in with the analysis thus far involve "responsibility in special jobs," "handwriting-usage," "social studies construction," "teacher decide period length," and "being in programs." Perhaps the easiest to understand is the "teacher decide period length" item. If we look at the items which have the lowest loadings on this factor, namely, "choose seats," "people talk and move," "free play," "folk-dancing," "field-trips," "major sports," we note that of these low items only one is negatively loaded on the factor, i.e., "people talk and move." Adding to this group of low loaded items the four which fall in the 30's we have "watching movie and film strips," "teacher assigning seats," "group deciding period lengths," and "group planning program." It would seem reasonable, considering the high loading of "teacher deciding period length," in contrast with these items which have low loadings, to suggest that students with a high score on this factor are, in addition to being interested in gleaning new knowledge from the world around them, interested in efficiency, i.e., an organized experience with the environment. Thus, they would seem to avoid things which they evaluate as inefficient in terms of time expenditure. It is not clear that the efficiency or inefficiency dimension is a simple function of the amount accomplished per unit time. The low loading on major sports could suggest that it is also in part a function of what is done with the time as well as how efficiently it is carried out.

The items on "social studies construction," "being in programs," "responsibility in special jobs," and "handwriting" are not clear. A possible interpretation in view of the other major components of this factor is that the students see "handwriting usage" and "social studies construction" as efficient or as techniques for furthering new knowledge. It may well be that they make judgments on the basis of the amount of learning or the increment in skill as a function of time. Were they to do this, it could be that they see these two areas as high on this efficiency factor, while they see such things as folk-dancing and field trips as low. Summary: except for a few perplexingly incongruous items, this factor contains two components reflecting major areas of satisfaction: seeking of information from whatever source is available and a desire for efficient usage of time.

Factor II: Prefers structure. For factor II, a far less clearly defined factor than I, let us look first at the items with heaviest loadings on this factor, ranging from .42 to .26 (Table 36). Of these items, the ones with positive loadings would seem to reflect preference for drill, structure, and mechanics in a highly controlled environment. The negative loaded items (which include the four items with the highest loadings on this factor), would seem to involve a dislike of creative activity, group decisions, spontaneity, and being given responsibility. If we hold to this interpretation of the factor then "giving reports," which has a positive loading on this factor, must be seen as one of the more structured activities, while "watching filmstrips and movies," which has a negative loading, must be seen as unstructured. This would seem rather

Table 36. Attitudes: Loadings of items on Boys' Factor II

Item number		Loadings
43	Watching movies and film strips	-.42
54	Group decide period length	-.41
15	Art techniques	-.37
16	Creative art and construction	-.35
31	Helping teacher with work	.33
1	Arithmetic drill	.29
8	Handwriting drill	.29
27	Homework	.28
30	Teacher giving private help	.28
44	Being in plays	-.28
51	Teacher keep strict control	.28
53	Teacher decide period length	.28
56	Group plan program	-.28
34	Giving reports	.27
36	Being class officer	-.27
52	People talk and move	-.27
4	Health facts	.26
7	Spelling writing	.26
12	Creative poetry	-.26
25	Organizing and writing reports	.26
37	Responsible and special jobs	-.26
50	Choose seats	-.26

perplexing unless watching movies and filmstrips also had a very low loading which we suggested implied that it was not seen as very efficient. Possibly the position of this item on both of these factors suggests the presence of some other dimension, such as boredom, for example.

The one surprise about the item loadings on this factor is the negative loading for reading skills and science construction and experiments or demonstrations. Perhaps for reading skills this reflects the manner in which these materials are presented. Science construction and/or demonstration could imaginably be either beyond these students or be too unstructured for them. In summary: students with high scores on factor II are potential technicians, preferring structured and more mechanical or skilled activities. With this discussion of factor II as background, factor I becomes a bit more clear by comparison. Students with high scores on factor I do not seek structure for its own sake, but only to the extent that it helps increase the efficiency of learning; high scores on factor II on the other hand, would seem to seek structure for its own sake. We can notice this for example, in the relatively high loading of the "teacher keeping strict control" item in factor II as compared with its relatively lower loading on factor I.

Factor III: Anxiety about competition. The highest items (mostly negative) in this factor range from .39 to .24 (Table 37). They would seem to reflect a non-social dimension; that is, students with high scores on this factor apparently desire to avoid peer interaction, especially where the peers are in control. What seems acceptable to students with high scores on this factor are teacher organized and led activities, or

Table 37. **Attitudes: Loadings of items on Boys' Factor III**

Item number		Loadings
60	Major sports	-.39
28	Students helping with work	-.38
53	Teacher decide period length	.37
54	Group decide period length	-.36
47	Working in small committees	-.34
57	Teacher plan program	.33
68	Free play	-.33
36	Being class officer	.31
39	Music-listening	-.30
38	Listening to discussions	.29
8	Handwriting drill	-.28
55	Quiet study periods	.27
48	Working in large committees	-.26
56	Group plan program	-.26
67	Individual study of interest	.25
32	Taking regular tests	.25
35	Being chairman	.23
45	Being in programs	.23
46	Playing games	-.23
63	Recreational reading	.23

individual activities, unless the student himself is the class officer, in which case he would supposedly have control of the environment. Possibly, however, the "being class officer" item should be interpreted somewhat differently, because there is also some positive loading on other items, e.g., "dramatics," which, taken with this item, might indicate rather exhibitionistic aspirations.

Also present in this factor are some weaker but nevertheless consistently positive items reflecting scientific and social studies interests as opposed to creative endeavors. In summary: this factor then does not seem to be unitary and remains somewhat ambiguous. Extrapolating from the data, we could suggest that it reflects dissatisfaction with peer activity in which there is no ascribed status, and on the other hand pleasure in participating in activities in which there is ascribed rather than achieved status with a preference for non-social or individual work if the student himself or the teacher is not to have the highest status in the situation.

Factor IV: Individual action, non-intellectual. For this factor, which is also filled with a large number of negatively loaded items (see Table 38), we shall consider first the highest items ranging from .37 to .23. The positive end of the factor suggests a boy who likes social non-intellectual activity, but more specifically likes exhibitionistic, individual creative aesthetic endeavors within a group context. Items of the negative end of the factor characterize a boy who prefers individual non-social activities such as construction of a reasonably spontaneous unstructured and non-intellectual nature. Summary: this factor reflects

Table 38. Attitudes: Loadings on items on Boys' Factor IV

Item number		Loadings
64	Following hobbies	-.37
67	Individual study of interest	-.37
14	Creative dance	.31
68	Free play	-.30
66	Folk dancing	.29
47	Working in small committees	-.28
49	Teacher assign seats	.27
4	Health facts	-.26
21	Science experiments or demonstration	-.25
35	Being chairman	.25
36	Being class officer	.24
63	Recreational reading	-.24
16	Creative art and construction	-.23
17	Music instruction	.23
23	Social studies research reading	.23
25	Organizing and writing reports	.23
5	Health problems	-.22
61	Field trips	-.21
18	Dramatization	.20
50	Choose seats	-.20

a concern with individual action of a non-intellectual variety. The difference between the positive and negative ends of the factor are (a) aesthetic vs. mechanical or scientific and (b) social vs. non-social. That is, high positive scores on this factor enjoy being individuals in social situations in which the content is aesthetic rather than intellectual or mechanical, while high negative scorers also enjoy individualized endeavor -- but enjoy it alone and when it concerns mechanics or science.

Factor V: Control of environment. The highest items (ranging from .41 to .23) mainly are concerned with construction of all sorts which involves active, non-social control of the environment (Table 39). There is an interest in science in this group and a willingness to get involved on one's own and carry out endeavors. The negative end of the factor would be personified by a boy who would like highly social activities, or what we might consider as social control of the environment. Neither of these ends reflect any genuine intellectual involvement in the school environment. Summary: this factor concerns control of the environment. The positive end reflects the engineer syndrome with its control of the physical environment while the negative end reflects the Rotary syndrome with its control of the social environment.

Girls.

Factor I: Interest in efficiency. The high item loadings range from .65 to .35 and are all positive (see Table 40). This factor is very similar to the first factor for the boys. Ten of the same items appear in the fifteen items with the highest loadings for both the boys' and girls' factor. There are no instances in which an item has a high loading

Table 39. Attitudes: Loadings on items on Boys' Factor V

Item number		Loadings
21	Science experiments or demonstration	.41
46	Playing games	-.39
45	Being in programs	-.35
16	Creative art and construction	.33
19	Science construction for demonstration	.32
20	Social studies construction	.31
37	Responsible and special jobs	-.31
59	Participate in student led discussions	-.31
15	Art techniques	.30
32	Taking regular tests	.30
33	Taking achievement tests	.27
26	Long periods thorough work	.26
35	Being chairman	-.26
36	Being class officer	-.26
64	Following hobbies	.25
10	Reading skills	-.24
55	Quiet study periods	-.24
5	Health problems	-.23

Table 40. Attitudes: Loadings on items on Girls' Factor I

Item number		Loadings
23	Social studies research reading	.65
42	Listen guest speaker	.64
58	Participate teacher led discussion	.63
11	Grammar	.62
24	Going deeply into school work	.62
40	Listen, teacher explaining	.62
38	Listening to discussions	.61
32	Taking regular tests	.57
41	Listen, classmates explaining	.56
9	Handwriting - usage	.53
34	Giving reports	.53
59	Participate in student-led discussion	.52
20	Social studies construction	.52
22	Science research reading	.50
25	Organizing and writing reports	.48
37	Responsible and special jobs	.45
26	Long periods thorough work	.35
45	Being in programs	.45

on factor I for one of the sexes but has a low or negative loading on factor I for the other sex. Therefore we can reasonably interpret the factor for both sexes in the same way -- that is, *as primarily reflecting positive attitudes towards an organized and efficient experience, be it social or non-social, which would provide for the acquisition of new knowledge*.

Factor II: Prefers group membership; anonymity. The items having the highest loading on this factor are for the most part negative in direction (see Table 41). These items have a considerably lower loading than did the items in factor I. They range from .45 to .30. In this range there are seven negative and six positive items. We should characterize the positive and the negative loadings separately. Looking first at the negative items we find activities which reflect a dislike for recreational reading and quiet study periods, along with a dislike for writing creative stories, participating in plays and programs, accepting responsibility or being the class officer. A study of these items plus other items which fall just below the cutting point and also have negative loadings suggests strongly that girls with high scores on this factor dislike standing out in situations, being selected or placed in a position of individual leadership or on view before others. In addition such a girl would seem to dislike individual work of a solitary nature. When we add the items with positive loadings we have *a girl who does not wish to stand out or to be alone but prefers to be a member of a group with a somewhat anonymous role. She wants to play games, be in group planning, discussions, major sports, all of which are generally of a non-intellectual nature*.

Table 41. Attitudes: Loadings on items on Girls' Factor II

Item number		Loadings
63	Recreational reading	-.45
13	Creative stories	-.42
41	Listen, classmates explaining	.42
46	Playing games	.42
45	Being in programs	-.41
7	Spelling in writing	.39
37	Responsibility, special jobs	-.39
38	Listening to discussions	.38
36	Being class officer	-.34
60	Major sports	.33
54	Group decide period length	.31
55	Quiet study periods	-.31
44	Being in plays	-.30

If we add the items which fall just below the cutting point for the positive items, we have in addition to listening and some group-decision making and planning and field trips, all of which would seem consistent with our original interpretation. The two items which are somewhat perplexing are a positive loading on "spelling and writing" and a positive loading on "taking regular tests" which comes slightly below our cutting point. These items might suggest that there is some positive attitude towards participating in structured tasks in the school. However, this is contradicted by insignificant loadings on the drill items and negative or insignificant loadings on the construction items. We are then left with these paradoxes for this factor.

Factor III: Active participation; non-intellectual. The items in factor III with the highest loading range from .41 to .24, with six items having negative loadings and twelve items with positive loadings (Table 42). This factor involves active participation with such items as helping others, taking responsibility, group decision, student helping, folk-dancing, program participation, major sports, choosing seats and creative dance. What is disliked is going deeply into schoolwork, listening to the teacher explaining or to discussions, or students explaining and in addition there is a dislike of foreign language and creative poetry. Here, then, are girls who like participation of an active, spontaneous sort, are not interested in depth, and don't particularly like individual evaluative endeavors. The highest positive item on this factor is "people talking and moving" which has a loading of .41 and is very consistent with the above factor interpretation.

Table 42. Attitudes: Loadings on items on Girls Factor III

Item number		Loadings
52	People talk and move	.41
20	Social studies construction	-.34
29	Helping others with work	.33
37	Responsibility, special jobs	.32
54	Group decide period length	.31
14	Creative dance	.30
40	Listen, teacher explaining	-.29
28	Student helping with work	.28
64	Following hobbies	.27
66	Folk dancing	.27
3	Foreign language	-.26
7	Spelling in writing	.26
36	Being class officer	.25
41	Listen, classmates explaining	-.25
45	Being in programs	.25
12	Creative poetry	-.24
24	Going deeply into school work	-.24
60	Major sports	.24

There are two surprising items on this factor, both of which are below our cutting point but close to it. They are positive attitudes towards "spelling and writing" and positive attitudes towards quiet study periods. Spelling and writing has now come out perplexingly in two factors and therefore possibly deserves some attention in terms of its validity as an item labeled as such. Equally perplexing is the quiet study period pleasure, especially in view of the somewhat anti-intellectual nature of the girls scoring high on this factor.

Factor IV: Potential clubwoman. The items on this factor have loadings ranging from .39 to .24. This includes six negative items and nine positive items (see Table 43). The highest positive items on this factor reflect a pleasure from helping, having a well organized world and possibly leading or controlling through chairmanship, etc. The girls with high scores on this factor would seem to dislike spontaneity, free group activity or creative endeavor of any kind. The loadings on the items having specifically academic reference would seem to reflect an acceptance of the more structured aspects such as skill acquisition, demonstrations, construction, etc. Possibly the interest in science research reading fits in here. The items which are rather perplexing are "going deeply into schoolwork" and "organizing and writing reports" and possibly also the "science research reading." These items suggest that the factor is not anti-intellectual even though it is not particularly centered around intellectual endeavor.

A girl scoring high on this factor, therefore, could be characterized as a potential clubwoman -- who would most comfortably be chairman and work

Table 43. Attitudes: Loadings on items on Girls' Factor IV

Item number		Loadings
31	Helping teacher with work	.39
43	Watching movies and film strips	-.36
28	Student helping with school work	.34
44	Being in plays	-.34
46	Playing games	-.34
29	Helping others with work	.33
62	Singing	-.33
13	Creative stories	-.32
25	Organizing and writing reports	.31
34	Giving reports	.31
51	Teacher keeping strict control	.28
35	Being chairman	.27
15	Art techniques	-.25
36	Being class officer	.25
49	Teacher assign seats	.25
1	Arithmetic drill	.24
57	Teacher plan program	.24

hard at activities having a socially helpful purpose, as long as the task were relatively well-defined and not spontaneous.

Factor V: Group participation; unassertive role. From Table 44 it can be seen that these items reflect positive attitudes towards participating in group activities, specifically activities which are not centered around the acquisition or consideration of new knowledge. For example, there is a dislike for athletics, following hobbies, or going into individual or intensive endeavors. The high loading on being class officer would be a bit perplexing here but may well be more at the fantasy level than in terms of a real desire. Girls who have high scores on this factor might be best characterized by what they are not; that is, they are not intellectual, and they are not necessarily interested in autonomy or individual endeavor. On the other hand, they enjoy working with others, in tasks which do not demand individual intellectual effort. They are helpful but not so much so that it would characterize them. They would not seem to be desirous of getting into a situation where they would be competitive or where the group member's wills would rule. That is, they desire group activities but those in which assertiveness does not win.

Treatment of Factor Scores

These factors, almost without exception, contain paradoxical items which detract from any simple pure source definition of the factors. Nevertheless, the majority of items with high loadings on each factor form a sufficiently coherent picture to justify our treating the dominant theme of each factor as valid.

Table 44: Attitudes: Loadings on items on Girls' Factor V

Item number		Loadings
45	Being in programs	.35
44	Being in plays	.33
29	Helping others with work	.32
64	Following hobbies	-.32
22	Science research reading	-.30
23	Social studies research reading	-.30
36	Being class officer	.30
28	Student helping with work	.29
61	Field trips	.29
54	Group decides period length	-.28
35	Being chairman	.27
37	Responsibility, special jobs	.27
49	Teacher assign seats	-.27
50	Choose seats	.27
15	Art techniques	-.25
25	Organizing and writing reports	-.25
59	Participate student led discussion	-.25

Our next step, therefore, was to determine a score for each student on each of the sex-appropriate factors. These scores were obtained by summing a student's scores on the items with the highest loading on each factor after each item score had been weighted on the basis of the actual factor loading for that item. We then correlated these factor scores with the many other variables of which this study is composed. What follows is an analysis of these correlations, albeit selective, of each factor with other variables. Although for purposes of discussion we shall refer to high factor scores as if they represented actual student types, the reader should keep in mind that the statistical manipulations underlying this discussion do not necessarily warrant such a strong interpretation. The size and overlap of the factor loadings on the items, as well as the students' scores on the various factors, suggest that such pure types are statistical artifacts. It is more realistic to expect that students would score high on more than one factor, and therefore a factor profile would be a more accurate clinical description of actual students' attitudes. Students' profiles would, however, in many cases, demonstrate a dominance of one factor over the others, and such dominance for any student would allow us to speak meaningfully of this dominance of a specific factor more or less as a type.

Correlates of Factor Scores

The correlations in the tables to follow have been run, on the four groups of children divided by sex and ability, between these attitude factor scores and the predictor variables. The former were constructed for spring scores only; most of the predictor variables are for both fall and spring. It should be recalled that although both boys' and girls' correlations with each of the numbered factors are presented on the same tables, the target factor score is not based on the same items for boys and for girls. The factors are the same for both ability groups of boys, and the same (but different from the boys) for both ability groups of girls.

Boys.

Factor I: Interest in efficiency. (See Tables 45 and 46). Superior boys. The attitudes of the boy who is high on factor I are summarized as "values seeking of information from whatever source is available and desires efficient usage of time." These attitudes would seem to be most desirable for effective student role participation. We might generally expect therefore, that such students would have positive self-concepts insofar as their academic role is concerned, be doing well academically, be rated positively by their teachers with regard to academic matters, be thought of as good students by their peers, show a work orientation in their behavior, and otherwise generally demonstrate a positive and constructive school syndrome.

Our data tend to support our suppositions for the boys of superior mental ability. All of the correlations of self-concept with this factor are highly significant and positive although these students do differentiate in terms of their estimates of their abilities across areas (not on table). This suggests that we are not dealing with only a "halo effect."

In most areas the achievement of these boys is good, and there is a strong correlation with number skills on the PMA. In the creativity area, fluency is related positively, but originality does not show any relationship.

Table 45 TARGET VARIABLE: ATTITUDES - FACTOR I

PREDICTOR VARIABLES ↓ (child variables)	Spring scores Superior boys	 Average boys	 Superior girls	 Average girls
1. Self-concepts				
Fall				
Happy qualities	.25	.40**	.27	-.01
Overall mean	.31*		.36*	
Overall satisfaction	.46**a	.05	.31*	.48**
Overall improvement	.29	.20		
Spring				
Happy qualities	.32*	.41**	.35*a	-.06
Overall mean	.37*	.51**	.39**	-.01
Overall satisfaction	.24	.53**	.37**	
Overall improvement	.36*	.38**	.23	
2. Social relations				
Fall				
Liking for same sex			.30	.24
Liking for opp. sex		.27*	.35*	
Spring				
Liking for same sex			.25	
Liking for opp. sex		.38**	.21	-.04
3. Classroom behavior				
Fall				
Task oriented work		.22	.32*	
Spring				
Task oriented work		.25	.29*	
4. Achievement tests				
Fall				
Total composite	.21			
Reading composite			.23	
Work study composite		-.21	.23	
Arithmetic composite	.29*a	-.22		
Spring				
Total composite	.28		.22	
Reading composite	.32*		.32*	
Work study composite			.23	
Arithmetic composite	.23			
5. Attitudes - Fall				
Academic	.66**a	.23	.53**	.38**
Intensive study	.58**	.25	.59**	.39**
Overall mean	.56**	.24	.49**	.40**
Spring				
Academic	.92**	.89**	.85**	.83**
Intensive study	.83**	.86**	.65**	.75**
Overall mean	.87**	.91**	.78**	.75**
6. Creativity - Winter				
Plot originality		.04	.26a	-.38**
Things fluency	.44**a	-.04		
Things unusual	.31*			-.28*
Object synthesis	.23	.21	.22	
7. Primary mental abilities - Winter				
Total composite	.23		.32*	
Verbal			.21	
Space				
Reasoning				
Number	.46**a	.05		
8. Motives from TAT				
Winter				
Need achievement				
Need affiliation				
Need power				

Table 46 TARGET VARIABLE: ATTITUDES - FACTOR I

PREDICTOR VARIABLES (perceptions of others)		Spring scores		
	Superior boys	Average boys	Superior girls	Average girls
1. Teacher Ratings				
Fall				
Attractive appearance				
Physical ability	.32*			.27
Work habits	.27		.36*	.39**
Social virtues	.31*		.24	.29*
Happy qualities	.28			.37**
Creativity			.20	.36*
Intrinsic interest	.39**		.27	.33*
Seek status: academic	.41**		-.11	
Seek status: social				
Gain affection: peers				
Gain affection: teacher				
Spring				
Attractive appearance				
Physical ability	.23			.37**
Work habits	.21		.23	.23
Social virtues	.28			.24
Happy qualities	.24		.21	
Creativity				
Intrinsic interest	.36*		.35*	.34*
Mental ability	.37*		.33*	.27
Seek status: academic	.51**	.25		.30*
Seek status: social		.46**		
Gain affection: peers		.35*		.21
Gain affection: teacher				
2. Teacher Social Distance - Spring				
Teacher liking for child				
3. Peer Nominations				
Fall				
Attractive appearance	.23			.23
Physical ability				
Work habits	.24			.27
Soc. rel. with teacher	.22			
Mental ability	.30*	-.04		.41**
Social virtues	.24		.24	
Spring				
Attractive appearance	.21	-.19		.29*
Physical ability			-.15 a	.29*
Work habits	.22			.24
Soc. rel. with teacher		.22		
Mental ability	.21			.23
Social virtues	.23			
4. Social Distance				
Fall				
Liking by same sex	.35*			.24
Liking by opp. sex			.25	.26
Spring				
Liking by same sex	.21			.33*
Liking by opp. sex		.22	.27	

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The teachers see boys who score high on factor I as being reasonably high in intrinsic interest, and as having desirable personal and social characteristics but also as seekers of academic status and as having achievement anxiety (the latter not on table). That all of these characteristics go with factor I immediately suggests a complex motivational pattern underlying these attitudes. There are two alternative explanations, however. It may be that these findings reflect the fact that these four ratings go together in the teachers' minds. On the other hand, perhaps various boys who are seen as manifesting one or another of these characteristics all score high on this factor. There is no strong evidence for the second alternative explanation, and our data do not allow us to determine the relative validity of the original interpretation of the data as opposed to the first alternative.

These factor I boys have the reputation among their peers of being good academically and having good social relations with other teachers. They are neither better nor less well-liked than other boys.

The behavior of these bright boys is consistent with the original supposition, i.e., they attend to the business at hand, are involved with ongoing activity whether it is an individual or collaborative endeavor. On the other hand, they significantly avoid involvement in nonacademic activities. The general picture of these boys with positive attitudes toward their school experience, then, is of boys whose behavior reflects a purposiveness and a desire to do well in school. Their achievement is good. Perhaps the word that characterizes them best is "appropriateness" both of attitude and learning.

Average boys. Boys who are below the class mean in mental ability (though actually of average intelligence according to national norms) show the same picture in two respects: with high scores on factor I go good self-concepts and high ratings on seeking status, particularly social status. In line with this is a tendency for high scorers to show more liking for girls than low scorers.

In other respects correlations for the average boys differ from those for superior boys: factor I attitudes are independent of achievement, creativity, and the various characteristics rated by teachers and peers. Evidently the interest in efficiency promotes good feelings about the self and reflects underlying motives for gaining social status; without the ability to back it up achievement and reputation do not come along.

Factor II: Prefers structure. (See Tables 47 and 48) Superior and average boys. Boys with positive attitudes on this factor reflect a preference for structured and more mechanical or skill-type activities. It is not surprising that there are no significant predictors of this factor for the superior boys, save the attitude measure of liking intensive study.

For the average boys, high scores on factor II are associated with high need affiliation, liking by the teacher and other boys. Teachers see these boys as having good work habits, and peers nominate them for showing physical ability. There is a positive relation with PMA number and negative with reasoning. For the less bright boy, then, holding factor II attitudes results in effective work on drill type activities, and considerable esteem from others in the classroom. The affiliative needs may

Table 47. TARGET VARIABLE: ATTITUDES - FACTOR II

PREDICTOR VARIABLES ↓ (Child variables)	Spring scores			
	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts				
Fall				
Happy qualities			.12 a	-.31*
Overall mean			.25 a	-.33*
" satisfact		-.23		
" improve				
Spring				
Happy qualities			.23 a	-.44**
Overall mean			.18 a	-.35*
" satisfact			.26	
" improve				
2. Social relations				
Fall				
Liking for same sex				
Liking for opo sex				
Spring				
Liking for same sex				
Liking for opp sex				-.24
3. Classroom behav'r				
Fall				
Task oriented work				
Spring				
Task oriented work				
4. Achievement tests				
Fall				
Total composite				-.22
Reading "				-.28
Work study "				
Arithmetic "				
Spring				
Total composite				
Reading "				-.22
Work study "				
Arithmetic "				
5. Attitudes - Fall				
Academic				-.22
Intensive study	.31*			-.25
Overall mean				
Spring				
Academic				
Intensive study				
Overall mean				
6. Creativity - Winter				
Plot originality		-.20	.10 a	-.32*
Things fluency		.25		-.16
Things unusual				
Object synthesis				
7. Primary mental abils. - Winter				
Total composite				
Verbal		.12		-.38*
Space		-.21	.20	
Reasoning		-.35*	-.23	
Number		.32*		
8. Motives from TAT				
Winter				
Need achievement			-.22	
Need affiliation	-.03 a	.42**	-.21	-.19
Need power				

See code on p. 45

Table 48 TARGET VARIABLE: ATTITUDES - FACTOR II

PREDICTOR VARIABLES ↓ (perceptions of others)	Superior boys	Spring scores Average boys	Superior girls	Average girls
1. Teacher ratings				
Fall				
Attractive appearance	.20			
Physical ability				
Work habits		.21		
Social virtues	.23			
Happy qualities				
Creativity				
Intrinsic interest	.24			
Seek status: academic		.23		-.25
Seek status: social	-.23			-.20
Gain affection: peers				
Gain affection: teacher				
Spring				
Attractive appearance		.24		
Physical ability	.22	.27	.21	
Work habits		.29*		
Social virtues	.21			
Happy qualities				
Creativity				-.23
Intrinsic Interest				
Mental ability (winter)				
Seek status: academic	.21	.08		-.37**
Seek status: social		.21		-.26
Gain affection: peers				
Gain affection: teacher				-.20
2. Teacher social distance				
Spring				
Teacher liking for child		.35*		
3. Peer nomination				
Fall				
Attractive appearance	.22			
Physical ability				
Work habits				
Social relations with teach	.22			
Mental ability				
Social virtues				
Spring				
Attractive appearance	.24	.22		
Physical ability	.21	.29*		
Work habits		.25		-.26
Social relations with teach	.22			
Mental ability		.24		-.34*
Social virtues				
4. Social distance				
Fall				
Liking by same sex				
Liking by opp sex				-.24
Spring				
Liking by same sex	.20	.30*		.26
Liking by opp sex				

See code on p.45

provide impetus to achieve this esteem through positive reactions to drill and structure.

Factor III: Anxiety about competition. (See Tables 49 and 50) Superior and average boys. Boys with high scores on this factor have been characterized as seeking ascribed status situations, i.e., the social control dimension is of some concern to them and they have anxiety about competition. They also prefer structured activities.

Here again, as on factor II, there are clear differences between average and superior boys. The bright boys who score high on this must be seriously anxious types: they are low in self-esteem and are negatively (if anything) perceived by teachers and peers.

Average ability boys show a much more positive picture in connection with this factor. They have good self-concepts, show high levels of task-oriented work, and are favorably regarded by their classmates. Evidently this group of attitudes represents a constructive reaction to the competitive school situation in the case of the average boys. Ascribed rather than achieved status releases them from an unequal competition.

Factor IV: Individual action, non-intellectual. (See Tables 51 and 52) Superior and average boys. Boys with high scores on this factor prefer individual action of a non-intellectual sort. For the superior boys group we find high negative correlations with achievement, creativity, and mental ability; evidently a non-intellectual pattern.

Average boys who score high are regarded by teachers and peers as good in physical ability and attractive in appearance, again non-intellectual qualities.

Table 49 TARGET VARIABLE: ATTITUDES - FACTOR III

PREDICTOR VARIABLES ↓ (Child variables)	Superior boys	Average boys	Spring scores Superior girls	Average girls
1. Self-concepts				
Fall				
Happy qualities		.31*	-.24	
Overall mean		.27	-.28	
" satisfact		.24		
" improve	-.22		.27	
Spring				
Happy qualities		.23		
Overall mean		.21		
" satisfact	-.24 a	.20		.26
" improve	-.32*			
2. Social relations				
Fall				
Liking for same sex				
Liking for opp sex	.23			
Spring				
Liking for same sex	-.23			
Liking for opp sex				
3. Classroom behavior				
Fall				
Task oriented work		.35*	-.20	-.08
Spring				
Task oriented work				-.25
4. Achievement tests				
Fall				
Total composite				
Reading "				
Work study "				
Arithmetic "				
Spring				
Total composite				
Reading "		.32*		-.13
Work study "				
Arithmetic "				
5. Attitudes - Fall				
Academic	-.23			
Intensive study				
Overall mean	-.23 a	.19		
Spring				
Academic	-.20		.23	.37**
Intensive study				
Overall mean			.29*	.31*
6. Creativity - Winter				
Plot originality				-.30*
Things fluency				
Things unusual			.17 a	-.42**
Object synthesis		.02	.13 a	-.40**
7. Primary mental abils. - Winter				
Total composite				-.26
Verbal				-.25
Space				
Reasoning		.03	.04 a	-.39**
Number				.20
8. Motives from TAT				
Winter				
Need achievement				
Need affiliation				
Need power				

See code on p. 45

Table 50 TARGET VARIABLE: ATTITUDES - FACTOR III

PREDICTOR VARIABLES ↓ (perceptions of others)	Spring scores			
	Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings				
Fall				
Attractive appearance				
Physical ability	-.25 a	.16		
Work habits				
Social virtues				
Happy qualities				
Creativity				
Intrinsic interest		.24		
Seek status: academic		.24		.22
Seek status: social	-.28 a	.20		
Gain affection: peers				
Gain affection: teacher				
Spring				
Attractive appearance				
Physical ability				
Work habits				-.22
Social virtues				
Happy qualities				
Creativity	-.25			
Intrinsic interest				
Mental ability (winter)		.25		
Seek status: academic		.21		
Seek status: social		.24		
Gain affection: peers	-.23 a	.19		-.21
Gain affection: teacher		.20		
2. Teacher social distance				
Spring				
Teacher liking for child				
3. Peer nominations				
Fall				
Attractive appearance		.20		
Physical ability				
Work habits	-.10 a	.31*		-.13
Social relations with teach		.29*		-.15
Mental ability		.28*		
Social virtues	-.22 a	.25		
Spring				
Attractive appearance		.21		.26
Physical ability				.25
Work habits		.25		-.18
Social relations with teach		.31*		-.11
Mental ability				
Social virtues		.21		
4. Social distance				
Fall				
Liking by same sex		.20		-.29*
Liking by opposite sex				
Spring				
Liking by same sex				
Liking by opposite sex				

See code on p. 45.

Table 51 TARGET VARIABLE: ATTITUDES - FACTOR IV

PREDICTOR VARIABLES ↓ (Child variables)	Spring scores			
	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts				
Fall				
Happy qualities	-.22			
Overall mean				
" satisfact				
" improve				
Spring				
Happy qualities				
Overall mean			.21	
" satisfact				.28*
" improve				
2. Social relations				
Fall				
Liking for same sex			.25	
Liking for opposite sex			.25	
Spring				
Liking for same sex				
Liking for opposite sex		-.21		
3. Classroom behavior				
Fall				
Task oriented work		.29		
Spring				
Task oriented work	.20		-.23	
4. Achievement tests				
Fall				
Total composite	-.27			
Reading composite	-.32*a	.17	.10	
Work study composite				
Arithmetic Composite				.22
Spring				
Total composite	-.24			
Reading composite	-.41**a	.01	.07	-.23
Work study composite				
Arithmetic composite	-.21			
5. Attitudes				
Fall				
Academic				
Intensive study			.21	
Overall mean				
Spring				
Academic		-.14		.29*
Intensive study	-.24		.37*	
Overall mean		-.22	.22	
6. Creativity - Winter				
Plot originality	-.33*			-.24
Things fluency	-.41** a	.27		
Things unusual	-.55**a	-.09	.11	-.27
Object synthesis	-.34*		.19	
7. Primary mental abils. - Winter				
Total composite	-.23			
Verbal	-.22	.12		-.30*
Space				
Reasoning				
Number	-.31*a	.17		
8. Motives from TAT - Winter				
Need achievement	.21			-.24
Need affiliation			.21	
Need power				

See code on p. 45

Table 52 TARGET VARIABLE: ATTITUDES - FACTOR IV

PREDICTOR VARIABLES (perceptions of others)	Superior boys	Average boys	Spring scores Superior girls	Average girls
1. Teacher ratings				
Fall				
Attractive appearance				
Physical ability		.37*		
Work habits				
Social virtues	.23			
Happy qualities		.22		
Creativity		.23		.21
Intrinsic interest				.36*
Seek status: academic				.37**
Seek status: social				
Gain affection: peers	.21			
Gain affection: teacher	.28			
Spring				
Attractive appearance				
Physical ability		.39**		
Work habits	-.03		.41**	
Social virtues	.30*			
Happy qualities				
Creativity				
Intrinsic interest			.30*	
Mental ability (winter)	-.38**		.07	
Seek status: academic				
Seek status: social	.25	.21	-.18	
Gain affection: peers	.31*.		-.18	
Gain affection: teacher				
2. Teacher social distance				
Spring				
Teacher liking for child				
3. Peer nominations				
Fall				
Attractive appearance	.20	.48**		
Physical ability				
Work habits		.21		.22
Social relations with teach				
Mental ability		.28		
Social virtues				
Spring				
Attractive appearance		.45**		.24
Physical ability		.33*		
Work habits				
Social relations with teach			.24	.30*
Mental ability				.32*
Social virtues				
4. Social distance				
Fall				
Liking by same sex		.25	.25	
Liking by opposite sex				
Spring				
Liking by same sex		.23		
Liking by opposite sex				

See code on p. 45

Factor V: Control of environment. (See Tables 53 and 54) Superior and average boys. Boys high on this factor we have characterized as evidencing in their attitudes the "engineer syndrome" with its intellectual control of the physical environment. In the superior boys' group, these attitudes are associated with fair achievement and good mental ability. However, bright boys scoring high on this factor are not seen as creative or attractive by their teachers. Average boys are not outstanding on any of the child variables, but their peers see them as getting along well with teachers.

Girls.

Factor I: Interest in efficiency. (See Tables 45 and 46) Superior and average girls. This factor is similar to the first factor for boys, i.e., high scorers are characterized as preferring organized and efficient experience which provides for the acquisition of new knowledge. Similarly in their behavior, the superior girls who score high on this factor show good work habits, both individual and social.

Insofar as their self-concept is concerned, these girls are quite positive, especially with regard to their intellectual ability and performance. This estimate is corroborated by teachers' judgment. Teachers also rate them high in intrinsic interests and work habits, and their achievement is good. Unlike the bright boys showing this pattern of attitudes the bright girls are not noted for academic seeking of status. Curiously, they are not seen as outstanding by their peers, nor liked particularly by the other girls. Teachers regard them favorably, perhaps because of the interest in efficiency, but this does not provide appeal for other girls of the class.

Table 53 TARGET VARIABLE: ATTITUDES - FACTOR V

PREDICTOR VARIABLES ↓	Spring scores			
(Child variables)	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts				
Fall				
Happy qualities				
Overall mean				
Overall satisfaction	.24	.27		-.29*
Overall improvement				-.21
Spring				
Happy qualities				
Overall mean				
Overall satisfaction				
Overall improvement				
2. Social relations				
Fall				
Liking for same sex	.30* a	-.14	-.16	
Liking for opposite sex	.22			
Spring				
Liking for same sex				
Liking for opposite sex		.21		
3. Classroom behavior				
Fall				
Task oriented work				.23
Spring				
Task oriented work				
4. Achievement tests				
Fall				
Total composite	.21		-.16 a	.25
Reading composite				
Work study composite			-.18 a	.24
Arithmetic composite	.29*		-.13	.25
Spring				
Total composite	.22			
Reading composite			-.23	
Work study composite	.22		-.27 a	.20
Arithmetic composite				.27
5. Attitudes				
Fall				
Academic				
Intensive study	.26		-.23	
Overall mean				
Spring				
Academic	.24	.38**		-.06
Intensive study	.41**	.42**	-.43**	-.24
Overall mean	.24	.26		
6. Creativity - Winter				
Plot originality			-.33*	-.22
Things fluency			-.25	
Things unusual			-.36*	
Object synthesis				
7. Primary mental abils. - Winter				
Total composite	.33*a	-.09	-.18	
Verbal	.15		-.45**	
Space	.23			
Reasoning			-.25	
Number	.21 a	-.29		.34*
8. Motives from TAT - Winter				
Need achievement				
Need affiliation	.20 a	-.24		
Need power				

See code on p45.

Table 54 TARGET VARIABLE: ATTITUDES - FACTOR V

PREDICTOR VARIABLES ↓ (perceptions of others)		Spring scores		
	Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings				
Fall				
Attractive appearance	-.31*			
Physical ability		-.29*		
Work habits				
Social virtues				
Happy qualities	-.25		.16	
Creativity				
Intrinsic interest				.22
Seek status: academic				
Seek status: social				
Gain affection: peers				
Gain affection: teacher				
Spring				
Attractive appearance	-.23	-.15		.26
Physical ability				
Work habits				.23
Social virtues				
Happy qualities				
Creativity	-.29*			.23
Intrinsic interest				
Mental ability (winter)				.27
Seek status: academic				
Seek status: social				
Gain affection: peers				
Gain affection: teacher			-.25	
2. Teacher social distance				
Spring				
Teacher liking for child		-.21		.23
3. Peer nominations				
Fall				
Attractive appearance		-.23		
Physical ability				
Work habits				
Social relations with teach		.32*		
Mental ability				
Social virtues				
Spring				
Attractive appearance				
Physical ability				
Work habits				
Social relations with teach	-.23 a	.39**	.22	
Mental ability				.20
Social virtues		.33*	.24	
4. Social distance				
Fall				
Liking by same sex				
Liking by opposite sex				
Spring				
Liking by same sex				
Liking by opposite sex				

See code on p. 45.

In the girls of average ability, the same attitudes are independent of achievement, mental ability, and task-oriented work. High scoring average ability girls show low creativity. However, they create a good impression with teacher and classmates in these respects. They are rated highly on creativity, mental ability and work habits. It is apparent, then, that it is not so much their production as their style of being students that is most convincing both to themselves and to those around them.

Factor II: Prefers group membership; anonymity. (See Tables 47 and 48) Superior and average girls. The attitude profile for girls scoring high on this factor is characterized by some concern about anonymity and remaining in non-intellectual settings. These attitudes are impressively consistent with the correlated material that we have on these girls.

The girls, especially the average ability girls, are seen as poorly motivated by their teachers. Their peers concur in a low estimate of their intellectual capacity. Actually these estimates are generally correct as indicated by the low primary mental abilities score and their poor achievement record. There are very significant negative correlations with self-concept scores, and weak positive ones for girls of superior ability.

As far as the social relations of these girls are concerned the picture is not strong either positively or negatively, although it is a bit more positive in relations with the same than with the opposite sex. Both superior and average girls show negative correlations with need affiliation. Peer nominations are so infrequent as to suggest that they succeed in remaining anonymous or invisible.

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Behaviorally these girls are not outstanding for task-oriented work or its lack. Apparently, therefore, their non-intellectual bent is not acted out but rather is hidden under their cloak of normative behavior which increases the likelihood of their preferred anonymity.

Factor III: Active participation: non-intellectual. (See Tables 49 and 50) Superior and average girls. These girls like participation of an active, spontaneous sort, are not interested in depth, and don't particularly like individual evaluative endeavors. This attitude pattern evidently does not fit them well for getting along in the environment of these classrooms. The superior girls appear to be practically invisible; the average girls are low in creativity and mental ability and are not chosen as liked by other girls. Their lack of positive assets may make their adjustment difficult and their attitudes non-intellectual.

Factor IV: Potential clubwoman. (See Tables 51 and 52) Superior and average girls. The attitudes of girls scoring high on this factor indicates their interest in helping and doing service. They are neither intellectually nor non-intellectually oriented. They tend to like classmates, and engage in social work and social friendly rather than task-oriented classroom behavior (latter not on table). This absence of academic behavior is reflected in undistinguished academic performance.

Teachers are favorably influenced by these girls' role characteristics; they see them as having good work habits and intrinsic interest, when in fact this does not seem to be the case. A clue here is that their peers see both groups of girls as having positive social relationships with the teachers. Perhaps they are seen as identifying with the teacher's role.

Factor V: Group participation; unassertive role. (See Tables 53 and 54) Superior and average girls. These girls are characterized by non-intellectual unassertive attitudes. Correlates of these attitude scores show, for the superior girls, negative relations to achievement, creativity, and mental ability. For the group of average girls, there are mild positive correlations with achievement. Neither group is at all visible, either positively or negatively, to teacher or classmates. In truth, these girls seem behaviorally to achieve the unassertiveness they prefer!

Teacher attitudes.

Child target variable scores related to teacher attitude scores. Teachers filled out the same attitude scale as the children, indicating how well they liked the various subject areas and classroom activities. The teachers' completed forms were then scored for their agreement to each of the five factors found for boys, and also for each of the five girls' factors. Correlations were run between each teacher's score on the ten factors and the score obtained by each child on the child target variables.

These correlations represent on the one hand the classroom atmosphere presumably created by teachers holding different constellations of attitudes, and on the other the various "achievements" of children in the four sex-ability groups. The results are presented in Table 55.

For the superior boys, teacher attitudes on factors I, II, and III are positively correlated with the boys' task-oriented classroom behavior. Self-concept is positively related, in the average boys, to teacher attitudes on factors II and III. This last corroborates the findings reported

Table 55. Teacher score on attitude factors correlated with child target variables Correlations in excess of + or - .370.

SUPERIOR BOYS		AVERAGE BOYS	
Boys Factor I - interest in efficiency			
Task-oriented classroom behavior	(+)		
Boys Factor II - prefers structure			
Liking for other children	(-)	Self-concept, happy qualities	(+)
Task-oriented classroom behavior	(+)	Self-concept, overall	(+)
Social work behavior	(-)		
Boys Factor III - anxeity about competition			
Task-oriented classroom behavior	(+)	Task-oriented classroom behavior	(+)
Social work behavior	(-)	Self-concept, happy qualities	(+)
Boys Factor IV - individual action, non-intellectual			
No correlates			
Boys Factor V - control of environment			
Task-oriented classroom behavior	(-)	Task-oriented classroom behavior	(-)
Social work behavior	(+)	Social work behavior	(+)
		Attitudes toward school	(-)

SUPERIOR GIRLS		AVERAGE GIRLS	
Girls Factor I - interest in efficiency			
Task-oriented classroom behavior	(+)	Task-oriented classroom behavior	(+)
Attitudes toward school	(+)	Social work behavior	(-)
		Creativity: things unusual	(+)
Girls Factor II - prefers group membership; anonymity			
Creativity: plot originality	(-)	Creativity: things fluency	(+)
		things unusual	(+)
		Task-oriented classroom behavior	(-)

Table 55 (continued). Teacher score on attitude factors
correlated with child target variables
Correlations in excess of + or - .370.

SUPERIOR GIRLS		AVERAGE GIRLS	
Girls Factor III - Active participation; non-intellectual			
Liking for other children	(+)	Task-oriented classroom behavior	(+)
Social work behavior	(-)		
Achievement tests	(+)		
Creativity: things unusual	(+)		
" object synthesis	(+)		
" plot originality	(+)		
Girls Factor IV - Potential clubwoman			
Liking for other children	(-)	Liking for other children	(-)
Achievement tests	(-)		
Creativity: object synthesis	(-)		
Girls Factor V - Group participation; unassertive role			
Task-oriented classroom behavior	(+)	Task-oriented classroom behavior	(+)
Attitudes toward school	(+)	Social work behavior	(-)
Creativity: plot originality	(+)		

earlier on the relation between the average boys' own attitudes on factor III and self-concept. Creativity and achievement test scores do not appear to relate in either group of boys, to teacher attitudes.

However, creativity test scores appear frequently as correlates in the girls' list, particularly in the superior girls' group. The attitudes held by teachers apparently make a difference in the extent to which girls express creativity, as well as their liking for other children and other targets.

Discussion

This chapter has explored the use of attitudes as meaningful central concepts around which to organize our data. We have reviewed the relationships of both our a priori scales and factor analytic scales to other variables in our study.

The intercorrelations have generally supported our hypotheses and the overall picture is a coherent one. The patterns of these correlations in fall and spring and from fall to spring provide us with clues as to the directionality of the relationships.

Further we see numerous demonstrations in these data of the distortions in each individual's (be it teacher or student) apperception of the world. One can notice the ways in which behavior often mediates falsely as a communicative vehicle between people.

On the other hand, it is impressive how well integrated these students' lives are. If a girl has clubwoman attitudes, she leads a clubwoman's life. If a boy has limited abilities he develops attitudes and behaviors which provide him with an acceptable self image and social role.

This may be through rejecting kinds of activities which do not prove satisfying. Tyler (1959) has suggested that interest development through grade school is primarily a matter of learning to rule out clusters of things and activities one once liked.

One of the most satisfying components of this study is the factor analysis. For people who have been around children in school, the factors have intuitive face validity. With this feeling of the meaningfulness of these factors we can then study the correlational matrices into which they fit in order to get cues that can help us to empathize more realistically with the world in the way the child sees and is living it. It is through such empathy that change and growth is possible.

Because of space limitations we have chosen only a limited number of relationships to explore. Furthermore, we have made minimal interpretation. The reader has the data before him and his own experiences to go on with speculation beyond the point at which we stop.

This chapter taken by itself would even in all its complexity provide a deceptively simple description of individual differences among our children. It is for the reader to see this chapter in context with each of the other chapters in this book, and, with this perspective, to create his own mosaic of the child and his school experiences.

CHAPTER IX

CORRELATES OF CREATIVITY TEST SCORES*

Introduction

The final set of target variables selected for study in this project is the group of abilities or skills loosely lumped together as "creativity." Despite the potential importance of such abilities, not much is known about their determinants nor about the way in which they may facilitate or impede children's school learning. Getzels and Jackson (1962) and Torrance (1962) have shown that conventional achievement may be as good in children high in creativity, but lower in intelligence, as in children of high I.Q. and lower creativity. Also, they find, teachers do not appear always to appreciate the ideas of the creative child, and classmates sometimes think they are silly, wild or unduly non-conformist.

Yet it is beginning to be widely thought that divergent, as opposed to convergent modes of thought (Guilford, 1957, 1959) are necessary for the maintenance of our society, and that schools have a responsibility to develop skills of divergent as well as convergent thinking. It was for this reason that tests of so-called "creativity" were included in the present research, even though the available tests are still in experimental forms, and their validity has yet to be established by other than factor analytic means.

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*This chapter was written with the assistance of Donald L. King and Vivian S. Sherman.

The questions to be answered are as follows: 1) with what other talents, skills, attitudes do the creative abilities correlate, 2) how are children who show high or low scores on tests of creativity regarded by teachers and peers, and 3) reasoning from answers to the previous questions, how does it appear a child may use creative abilities to further his own development in school?

The tests selected are described in Chapter III; they tap abilities of fluency, originality, and semantic redefinition. Unlike the fall and spring administration procedure used for the other target variables, these tests were administered once only, in the winter, so that it is not possible to check stability of the scores over a year's time. However, the child's position on a creativity dimension may be related both to his fall and to his spring self-concept, and likewise for the other predictor variables. The results follow.

Results

Intercorrelations between creativity tests and PMA composite (See Tables 56-58)

The intercorrelation matrix of the tests used shows high correlations between things fluency and things unusual (both scores came from the Things Categories test). Otherwise the correlations are not unduly high; i.e., the tests are not seriously overlapping. Relationships with the Primary Mental Abilities composite are generally insignificant for two groups: average boys and superior girls. For the superior boys and the average ability girls there are significant relations to some creativity tests. This finding suggests less independence of "mental ability"

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and "creativity" for these groups than for the others, and should be kept in mind as the other results are presented.

Mean differences, sex and ability groups.

Table B-2 (Appendix) shows that, on the average, the boys and girls of superior mental ability score significantly better than the average mental ability groups on each of the creativity tests. Thus while within most of the sex-ability groupings there is not much relation between creativity and mental ability, mean creativity scores are higher in the superior ability groups.

No mean sex differences appeared in these data.

Things fluency: correlates (Tables 56 and 57).

Comparison of sex-ability groups. This test calls upon the facility to call up ideas wherein quantity and not quality of ideas is emphasized: the cognitive factor tapped is ideational fluency (French, Ekstrom and Price, 1963). Table 56 presents the child variables correlated with fluency scores, and Table 57 the perceptions of the child by significant others in the classroom related to fluency.

Summaries at the bottom of the tables show, for each of the sex-ability groups, the number of r's significant at the .05 or better level. Of the 36 child variables, 14 (39%) are significantly positive in the superior boys' group and the same number appear for the average girls. For the other two groups the significant r's are negligible. From the table showing perceptions of others in relation to fluency, 7 out of a possible 32 are significantly positive for the superior boys, 3 for the average girls, 1 for average boys, and none for superior girls.

Table 56

TARGET VARIABLES: CREATIVITY TEST MEASURES

PREDICTOR VARIABLES ↘ (Child Variables)	Things fluency				Things unusual			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concept-Fall								
Happy qualities	.34*			.34*	.29*		.26	.28*
Overall mean	.22	.25	-.09 a	.39**	.22	.20		.27
" satisfact.		-.20 s		.25			.24	
" improve.								
Spring-Happy qual.	.39**a	-.07		.28*	.31*			
Overall mean	.36* a	-.21 s		.31*	.22			
" satisfact.	.20					-.27		
" improve								
2. Social relations - Fall								
Liking for same sex			.28* a	-.17			.31* a	-.18
Liking for opp. sex	-.23 s	-.30*	.43**a	-.11	-.25 s	-.25	.42**a	-.10
Spring								
Liking for same sex				.23				
Liking for opp. sex			.31*				.32*	
3. Classroom behavior - Fall								
Task-oriented work			-.29*	-.24		-.26	-.23	
Spring								
Task-oriented work		-.24	-.25				-.21 a	.33*
4. Achievement tests - Fall								
Total composite	.35*			.34*	.46**	.24	.21	
Reading composite	.24	.21		.32*	.46**	.24	.31*	.25
Work study "	.37*			.27	.40**			
Arithmetic "	.32*	.23		.28*	.40**	.23		
Spring								
Total composite	.47**s		-.12 a	.45**	.56**s	.31*	-.01	.31*
Reading "	.46**s	.20	-.09 a	.40**	.65**a,s	.32*	.07	.30*
Work study "	.30*			.41**	.36*	.31*		.34*
Arithmetic "	.46**s		-.20 a	.39**	.47**s	.23	-.14	.20
5. Attitudes - Fall								
Academic	.15 a	-.29*s		.11	.13 a	-.37*s		.06
Intensive study						[illegible]		
Overall mean		-.25				.37**		
Spring-Academic	.38**a,s	-.12	-.03		.19		.15 a	-.23
Intensive study	.25						.29*	
Overall mean	.40**a,s	-.13	-.10					-.21
6. Creativity - Winter								
Plot originality	.28		.40**	.30*	.39**	.25	.55**	[illegible]
Things fluency					.76**	.69**	.78**	.75**
Things unusual	.76**	.69**	.78**	.75**				
Object synthesis	.45**	.22	.52**	.43**	.43**	.19 s	.55**	.58**
7. Primary mental abils.-Winter								
Total composite	.39**s		-.03 a	.42**	.33*	.26		.44**
Verbal	.24	.22		.38**	.46**	.33*	.31*	.50**
Space			-.25				-.27 a	.13
Reasoning	.24	-.13 s		.30*			.32*	.29*
Number	.48**s	.32*	.02		.31*			
8. Motives from TAT - Winter								
Need achievement								
Need affiliation				.21				
Need power		.30*						
Number significant +	14	2	3	14	13	4	7	8
Number significant -	0	2	1	0	0	2	0	0

Total possible - 36; correlations involving creativity tests omitted from totals

See code on page 45.

Table 57 TARGET VARIABLES: CREATIVITY TEST MEASURES

PREDICTOR VARIABLES ↓of (perception/others)	Things fluency				Things unusual			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings - Fall								
Attractive appear.	.39**a	-.06		.32*	.25			
Physical ability	.29*							
Work habits					.19			
Social virtues								
Happy qualities								
Creativity	.19 a	-.28* s		.17	.21 a	-.24		
Intrinsic interest	.35* s		-.09		.40**a, s	-.02	-.02	
Seek stat: acad.	.39**s		-.21 a	.22	.43**a, s	-.01	-.31*	
Seek stat: social	.25			.22	.31*		.22	
Gain affect: peers			.24				.25	
Gain affect: teach.								
Spring								
Attractive appear.				.20				
Physical ability	.25							-.21
Work habits				.27	.26			
Social virtues								
Happy qualities	.49**a	-.03		.21	.31*a	-.09		
Creativity	.18 a	-.21			.20			
Intrinsic interest	.26				.35*a	-.09		
Mental ability	.46**a, s	-.02	-.06	.20	.56**a, s	.06	.04	
Seek stat: acad	.29* s		-.16		.44**			
Seek stat: social			.21				.24	
Gain affect: peers	-.21 s		.31*		-.18 s		.26	
Gain affect: teach.								
2. Teacher social distance - Spring								
Teacher liking for child								
3. Peer nominations - Fall								
Attractive appear.								
Physical ability								
Work habits	.43**s		-.03	.26	.33*			
Soc.rel.with teach.	.25							
Mental ability	.38* s		-.14		.30*			
Social virtues								
Spring								
Attractive appear.								
Physical ability		.28*						
Work habits	.26		-.13 a	.36*	.23			.23
Soc.rel.with teach.				.23				
Mental ability	.29*		-.06 a	.37**	.31*			
Social virtues						-.21		
4. Social distance - Fall								
Liking by same sex	.24							
Liking by opp. sex	.25							
Spring								
Liking by same sex								
Liking by opp. sex								
Number significant +	7	1	0	3	7	0	0	0
Number significant -	0	1	0	0	0	0	0	0

Total possible 32; the 8 teacher ratings involving motive strength (seek status: acad., and social; gain affection: peers, and teacher are omitted from totals)

See code on page 45.

Thus, things fluency is related in two sex-ability groups to many desirable characteristics and in the other two groups to scarcely any. It is intriguing that the groups resembling each other in respect to these correlates differ in both sex and mental ability. The question to be answered is what does ideational fluency provide as a resource to these disparate groups of children? Let us look at what these correlates are.

First, for the superior boys and average girls, both show significantly positive correlations with the following child characteristics:

Self-concepts
Achievement test scores
Primary mental abilities

Both groups are favorably regarded, by teachers and/or peers, for their attractive appearance, mental ability, and work habits. Between the groups there are a couple of differences: the superior boys show favorable school attitudes in connection with fluency and also good scores on PMA number; both of these are unrelated to fluency in the average girls.

Sufficient numbers of these correlations are significantly different from those of the average boys and superior girls, that it is clear that the predictive patterning is completely different. Two additional facts should be mentioned: for average boys the PMA number and TAT need power are positive; for the superior girls liking for other children and seeking to gain affection from peers are also positive and significant. Why these differences?

Discussions of the predictors of self-concepts, social relationships, classroom behavior, achievement tests, and attitudes have all brought out rather forcibly the apparent effect of sex-typed role expectations on boys and girls at these ages. We have seen that for these superior boys, academic achievement and striving is apparently becoming progressively more important while the average ability boys in these classrooms seem to get along better by agreeable affiliative behavior. Both groups of girls appear motivated toward an adequate amount of achievement, but the superior girls do not go too far along this line; they appear to be looking more toward achievement of social status than toward academic excellence commensurate with their abilities.

The average ability girls who hold good self-concepts have been shown to be influenced by others' perceptions of them as academically, rather than socially or affectionally oriented. They do not achieve better, as a group, than the boys of average ability, nor is their tested mental ability higher. They are, however, perceived by teacher and peers as having better work habits, and by peers as showing more mental ability than the boys equated to them by test performance.

Since for these average girls an "adequate" level of achievement is more difficult than for the superior girls, it can be reasoned that more motivation must be channelled into the academic endeavor than is necessary for the superior girls. In the present consideration of the function of ideational fluency as a resource held by children, the foregoing interpretation suggests possible reasons for the channelling of fluency into the academic syndrome for average girls and superior boys and not for the other two groups. Guilford (1957) discusses ideational fluency as using conceptual content to produce ideas rapidly, and as of divergent thinking type. If evaluation of the ideas is present, however, such fluency will be an asset in productive thinking of convergent type such as producing many correct answers to achievement test problems. That the fluency ability is related to achievement test scores with mental ability held constant is shown by partial r's of .29 for the average girls and .30 for the superior boys between things fluency and spring achievement composite, with PMA composite partialled out.

This reasoning does not explain why the PMA composite correlates +.42 with things fluency for the average girls, and -.03 for the superior girls, a significant difference in size of correlation. If there is a ceiling effect on one or the other score (for which there is no evidence) the correlation for superior boys should also be low. But it is +.39, significant at the .01 level. It will be most interesting to see if these findings stand up on replication with a new sample. New data are currently being analyzed for this purpose.

Things unusual: correlates. (Tables 56 and 57).

Comparison of sex-ability groups. The same Things Categories test was used to obtain the things unusual score. This is an originality measure, represented by a total of all the good and unusual responses. From Table 56, correlations between the fluency and unusual scores are shown to range between .69 and .78 for the sex-ability groups. Correlates for the unusual target should therefore be similar to those for fluency.

Getzels and Jackson (1962) found that highly original, creative children were often non-conformist in their school attitudes, and were less favorably regarded by teachers than the less creative, but bright children. The present data provides some opportunity to check these findings, especially in any contrast to be found from correlates of fluency, which as we have seen, appears to be channelled into a striving, academic syndrome in two groups of children, and unusual which is more similar to the kind of creativity Getzels and Jackson were concerned with.

Considering first the superior boys, the things unusual target shows positive relationship to self-concept, achievement, and mental ability (Table 56). These parallel the correlates for fluency. PMA verbal correlates higher with unusual than with fluency; PMA number is lower with unusual. Another difference is that attitudes toward school are unrelated to unusual scores, whereas high fluency scorers showed very favorable attitudes in the spring. This finding supplies a little support for Getzels and Jackson: the highly original bright boys do not necessarily like the usual school activities.

The same correlates as appeared for fluency are seen for unusual in regard to perceptions of others: high unusual scorers are seen as seeking status, showing intrinsic interest and mental ability. The picture is solidly production and achievement oriented.

Average girls again resemble the superior boys, with a few differences. Self-concept is not regularly associated with unusual scores, and the perceptions of others show no significant relationships. A new one appears in spring task-oriented work; average girls high in unusual show high frequencies of such behavior.

The other two groups can be briefly described. Boys of average ability who score high on unusual are bright, achieve well in spring, and are not perceived by others as outstanding in any way. Superior girls are bright, friendly, but tend not to achieve well and also are not seen as outstanding in association with unusual scores.

Generally speaking, then, the kind of creativity tapped by the unusual scores seems to be channelled into academic production by both groups of boys and by the average girls. This does not mean they enjoy school; the production may be more pro forma than based on solid liking. Superior girls with high unusual scores are friendly and less striving; they also hold more favorable attitudes toward school activities. All groups show high r's between things unusual and PMA verbal scores.

Object synthesis: correlates (Tables 58 and 59).

Comparison of sex-ability groups. This test gets at the factor of semantic redefinition, according to the most recent analysis (French, Ekstrom and Price, 1963). The ability involves shifting the function of an object or part of an object in order to use it in a new way, breaking conventional sets and "functional fixedness."

Summaries of the correlations given at the bottom of Tables 58 and 59 again show the superior boys and average girls to produce many more positive correlates than the other two groups. These are heavily weighted toward achievement and mental ability test scores, with few significant relationships with the perceptions of others.

Average girls scoring high on object synthesis are rated as low in seeking to gain affection from the teacher. This perhaps fits with their positive relation to need power (not quite significant), representing a kind of independence of teacher guidance.

Table 58 TARGET VARIABLES: CREATIVITY TEST MEASURES

PREDICTOR VARIABLES (Child variables)	Object synthesis				Plot originality			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts - Fall								
Happy qualities	.20	.27		.27	.39**a	-.08	.47**	
Overall mean				.29*	.34*		.29*	
" satisfact.				.21			.22	
" improve.		-.26					.20	
Spring								
Happy qualities					.33*		.34*	
Overall mean					.35*a	-.09	.32*	
" satisfact.							.20	
" improve.	-.13 s	.20	.33*				.20	
2. Social relations - Fall								
Liking for same sex			.38**				.17 a	-.23
Liking for opp. sex			.42**a	-.01			.28*	
Spring								
Liking for same sex							.21	
Liking for opp. sex			.30*	.20		.21	.34*	.35*
3. Classroom behavior - Fall								
Task-oriented work	-.26 a	.28*			-.33*	-.20		
Spring								
Task-oriented work				.26				.29*
4. Achievement tests - Fall								
Total composite	.38*			.31*			.32*	
Reading "	.33*		.22	.49**			.41**	.34*
Work study "	.35*			.35*			.29*	
Arithmetic "	.32*							
Spring								
Total composite	.41**			.32*				.24
Reading "	.40**	.23		.33*				.33*
Work study "	.35*		.26	.38**				
Arithmetic "	.35*							
5. Attitudes - Fall								
Academic			.23		.33*		.41**a	-.15
Intensive study							.32*a	-.10
Overall mean							.19 a	-.29*
Spring-Academic			.24 a	-.16			.31*a	-.34*
Intensive study							.28*	
Overall mean			.22			.07 s	.20 a	-.34*
6. Creativity - Winter								
Plot originality	.26		.44**	.28*				
Things fluency	.45**	.22	.52**	.43**	.28		.40**	.30*
Things unusual	.43**	.19 s	.55**	.58**	.39**	.25	.55**	.43**
Object synthesis					.26		.44**	.28*
7. Primary mental abilities - Winter								
Total composite	.28		.33*	.44**				.30*
Verbal	.32*		.25	.40**	.30*	.00 s	.38**	.41**
Space							-.20	
Reasoning			.20	[illegible]				
Number		.27						
8. Motives from TAT - Winter								
Need achievement								
Need affiliation								
Need power		.32*		.27				
Number significant +	9	2	5	10	5	0	14	6
Number significant -	0	0	0	0	1	0	0	3

Total possible 36; correlations involving creativity tests omitted from totals.
See code on page 45.

Table 59 ↓ TARGET VARIABLES: CREATIVITY TEST MEASURES

PREDICTOR ↓ VARIABLES of (Perception/others)	Object synthesis				Plot originality			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Teacher ratings - Fall								
Attractive appear.		.20		.22			.20	
Physical ability								
Work habits							.20	
Social virtues								
Happy qualities		.20						
Creativity							.26	
Intrinsic interest								
Seek stat: acad.	.24 s		-.25					
Seek stat: social					.30*		.38**	.23
Gain affect: peers	-.21			-.19			.29*	.22
Gain affect: teach.		.19 s		-.28*	.23		.20	
Spring								
Attractive appear.	-.20	.32*					.21	
Physical ability							.31*a	-.18
Work habits			.29*					
Happy qualities		.22						
Creativity					.20	.34*		
Intrinsic interest			.31*					
Mental ability	.25			.25			.30*	
Seek status: acad.	.21						.29*a	-.18
Seek status: social					-.14 s		.47**	
Gain affect: peers		.21 s		-.20	-.23 s		.47**	
Gain affect: teach.		.32*s		-.30*			.26	
2. Teacher social distance - Spring								
Teacher liking for child	.28		.32*					
3. Peer nomination - Fall								
Attractive appear.								
Physical ability			-.29*					
Work habits				.22		.25	.20	
Soc. rel. with teach.								
Mental ability					-.19 a, s	.18	.25	
Social virtues						.23		
Spring								
Physical ability								
Work habits				.31*				
Soc. rel. teach.			.23					
Mental ability							.22	
Social virtues		-.20						
4. Social distance - Fall								
Liking by same sex		.22				.20	.25 a	-.18
Liking by opp. sex	.31*a	-.11	.25		-.07 a	.37*	.29*	
Spring								
Liking by same sex	.20							
Liking by opp. sex						.29*	.21	.2
Number significant +	1	1	3	1	0	3	3	0
Number significant -	0	0	1	0	0	0	0	0

Total possible 32; the 8 teacher ratings involving motive strength (seek status: acad., and social; gain affection: peers, and teacher are omitted from totals.)

See code on page 45.

Superior girls scoring high on object synthesis are also high in mental ability, but additionally, they show friendly liking for other children and are significantly liked by the teacher.

Average boys resemble the average girls in the positive relation between object synthesis and need power, but here the resemblance ends. If high on object synthesis, they are positively inclined to seek affection from teacher, and have some mildly favorable ratings from the teacher, namely for their appearance and happy qualities.

Summarizing, we find scores on object synthesis to be rather highly related to verbal scores on PMA. In terms of achievement test scores there are positive correlations with object synthesis only for the two groups identified earlier as channelling creativity into achievement: the superior boys and average girls. Again the superior girls appear to direct this ability toward social rather than academic goals, while the average boys who score well on object synthesis tend to have power needs and seek affectional relationships with the teacher.

Plot originality: correlates (Tables 58 and 59).

Comparison of sex-ability groups. The task here is to write clever, comical or remotely associated titles for story plots. Fluency is also involved (as it is in all four creativity tests) in that the score takes account of number of original titles written.

Here the sum of significant predictors for the sex-ability groups changes radically. The superior girls show by far the most (14 positive, or 39%) on the child variable list (Table 58).

These include, for the superior girls, the following:

Self-concepts
Liking for other children
Achievement tests (fall)
Attitudes
PMA verbal

These correlates suggest that the more verbally able among the superior girls' group also produce more original responses on Plot Titles, and besides showing the type of gay humor reflected by this originality, they are enthusiastic about school and like other children. In turn they are liked by the other children of both sexes (Table 59) and are regarded moderately favorable by the teacher, particularly for seeking status and gaining affection. For these girls, evidently, the syndrome associated with originality includes sociability, positive attitudes and fall good achievement. In several other instances, we have seen the drop in predictive power of spring achievement for these bright girls. Although they are regarded as status-seeking, when the wit and fun involved in plot originality are present, they are well-liked.

In the superior boys' group, some of the correlates are the same. Self-concepts are generally positive in connection with high scores on plot originality, and PMA verbal is positive. On the other hand, the friendliness and popularity correlates are lacking, and the status seeking is not as clear. There are absolutely no relations to achievement. Behaviorally, there is a negative relation between task-oriented work and plot originality. Those bright boys scoring high on this form of originality, then, feel good about themselves, but do not relate to others in the classroom nor turn their energies toward academic achievement.

For boys of average mental ability, correlates of plot originality are few indeed; in fact, liking by other children is the only variable reaching significant proportions.

And what of the average girls, who have shown the academic channelling of creative talent in association with each of the other creativity tests? Achievement is again positively related to plot originality, as is PMA mental ability. Self-concepts are unrelated, attitudes negative, but task-oriented classroom behavior again appears positively associated. Industry and achievement, performed without love or enjoyment, appear to be the potent determinants here. Lest this seem too driven a picture, try reversing the coin: it can equally well be said that, among the girls of average, rather than superior, mental ability, those who are brighter, work hard, and achieve well are able to show originality which may be latent or unexpressed in others. This does not mean a Pollyanna type of liking everything about school; attitudes are often negative in connection with expression of originality.

Discussion

The four creativity tests used differ in the abilities tapped. Things fluency requires the child to write as many ideas as possible in a short space of time, without regard for their appropriateness. One of the factors producing high scores on this test may be motivation to produce; another may be the free, rapid, and uninhibited flow of ideas. In two groups of children, but not the other two, high scores on this test were found associated with good academic production and favorable regard from teachers and peers. Interpretation of the findings requires speculation as to how the groups of children showing different patternings may use this type of ability to further their own goal orientations for school life.

First, for the two groups of children having superior mental ability. Bright boys of this sample appear to use their fluency and originality abilities as a resource facilitating their motivation for achievement. There appears to be considerable consensus among the boys themselves (self-concepts), the teacher (ratings) and the classmates (peer nominations) that this is a desirable goal for them. To the extent that they show productive creativity on these tests, they also show high scores on tests of mental ability and achievement, and the total production syndrome is viewed with satisfaction. Boys from this group are expected to be college bound, and perhaps to be in a college preparatory phase even in fifth or sixth grade. The academic productivity to which they turn their creative talents is, from this point of view, useful instrumentally.

The foregoing statements apply to the correlates of three of the four creativity tests. For the plot originality (clever, humorous) test scores, the superior boy himself holds good self-concepts in association with high scores, but the teachers and classmates do not go along with this estimate. Apparently this talent is not seen by them as so worthy and desirable as that involving academic productivity. Holland (1959) finds favorable teacher ratings associated with persistence, self-control, and academic interests in a group of National Merit Scholarship finalists. His data suggest that teachers' values run in these directions, and less toward the playfulness and impulsivity often found in persons judged creative by their actual work production (Barron, 1937).

In the group of superior girls, the academic syndrome does not appear strongly. Creativity is channelled toward social goals, particularly that form of creativity tapped by plot originality. And for bright girls, good scores on plot originality are associated with liking and admiration from teacher and peers; evidently charm, wit, gaiety are appropriate and desirable characteristics in the superior girls, while these are independent of the judgments made of superior boys.

For average boys, the situation appears different. Are there no role expectations for them for which creative ability is an asset? The humor reflected in plot originality is associated with liking by other children, particularly girls, but aside from this the views of teacher, peers and the boys themselves do not suggest that any of the behaviors represented by creativity tests are desirable assets. This seems unfortunate; a non-reinforcing state of affairs.

Girls of average ability are expected, like their brighter sisters, to be cooperative with academic goals. They evidently tend to use fluency as instrumental to academic production, take their work seriously, and turn what originality they have also toward academic channels. Their attitudes toward school activities suggest, however, that the more creative average girls exhibit a compulsivity about being "good" in school that may be inimical to actually liking school.

Summary

1. Boys of superior mental ability and girls of average mental ability both show a pattern of correlates for the three of the four types of creativity sampled which involves channelling of fluency into academic

productivity. This apparently is found desirable, particularly for the boys, by teachers and classmates of this sample.

2. Clever, humorous responses to the plot originality test are associated with good self-esteem and enjoyment of social and school activities in girls of superior ability.

3. For boys of average mental ability, the four creativity tests used here did not reveal correlates suggesting much if any gain received from such talent, either in the boy's own feeling about himself or in others' opinions of him.

4. The results have been interpreted in terms of role-expectations of children depending on their sex and mental ability, and the function which one or another type of creative talent may play in supporting such expectations.

X. TEACHER CLASSROOM BEHAVIOR AND CHILD LEARNING*

Introduction

The preceding chapters (IV through IX) have analyzed the correlates of the six educational outcomes, or target variables, appearing in children. These correlates have included (1) "initial" (fall) and "final" (spring) measures of talents and attitudes of the children and (2) initial and final perceptions of the child by the significant others in the social atmosphere of the classroom: the single teacher in each room, and the approximately 28 classmates of each subject. Our aim has been to tease out the impact of the child variables on the perceptions of teachers and peers, and of the opinions of the latter on the children's own performances and attitudes over a school year.

This chapter turns to a quite different source of data: how the teacher actually behaves in his daily interaction with his class. Again we are dependent on correlational measures, and the cause - effect directions cannot be as pure as spring water. Further, the present data are based on only seven teachers and their classrooms. The N is seven on the teacher behavior side, and 195 on the child variable side. A larger sample of teachers and classrooms, using improvements in method, was examined as an outgrowth of the current study (Spaulding, 1963). Since the two samples represent different populations on both the teacher and child side, comparisons may be made for replicative purposes. The present data show naturalistic behavior of seven middle of the road, on the "modern" side, elementary teachers and correlates of this behavior in six aspects of learning shown by children in their classrooms.

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*The method for measurement of teacher behavior was developed by Richard Alpert and Margaret H. Pintler. This chapter was written with the assistance of Nicholas Anastasiow.

Description of Method

A time sampling method of measuring teacher interaction with children was designed in the preliminary years of the project. During the research year, the seven teachers of the research group were systematically observed for five full mornings in the fall and again for the same length of time in the spring. After extensive preliminary observation in a number of classrooms a scale of categories was worked out which was all inclusive in nature. In other words, no matter what type of behavior the teacher was exhibiting at the moment at which he was observed, it was possible to record his behavior meaningfully by means of the available categories.

In actual practice, the observer sat unobtrusively in a position in the classroom where she could hear most of the verbal remarks of the teacher and see him without turning her head. The seven teachers who were used in this study were well acquainted with the observers and used to having them in the room hour after hour observing the children. At the time of the observation, the teacher was not aware that he was being observed, but assumed that continued observation of the pupils was going on. The observer viewed the room as a whole, and was consciously aware of all that was happening in order that the teacher's behavior might be understood in context. At 90-second intervals the observer glanced at the teacher, observed what he was doing and immediately assessed and scored his behavior in terms of the categories of the scale, recording the scoring by means of number symbols. The choice of the unit of teacher behavior to be scored was made entirely on the basis of the time unit of 90-seconds. This eliminated the possibility of bias on the part of the observer in selecting items which seemed particularly significant to him at the moment, or in possibly choosing items that could be easily scored. Each unit of teacher behavior was scored completely independently of any other unit. However, the observer utilized all the context clues that made a unit meaningful in terms of what was happening in the classroom.

Whatever the teacher was doing at the moment that the observer looked at him was scored. If he were speaking, the length of the verbal unit to be scored was determined by the scoring system. As soon as he had said enough to be scored on all the aspects of the scale, the unit was judged to be complete and the observer scored the remark. In actual practice verbal remarks were most often found to consist of complete phrases or sentences, though a simple word such as "No!" constituted a unit at times. Nonverbal behavior was categorized immediately, and if a teacher were doing and saying two different things at the same time, the rule was to score the verbal remark. However, the observer never waited for a verbal remark to occur. If the teacher were doing two things simultaneously (such as observing the class while her arm was around the child beside her) scoring was done in terms of the teacher's visual orientation.

The 90-second interval for time sampling was sufficient to allow the observer to look at the teacher, to judge what he was doing, score the unit of behavior according to a carefully worked out and rather complicated system of scoring, and then look back at what was happening in the classroom and re-orient herself before it was again time to observe the teacher.

Generally the observer needed to record at least six scoring symbols, since many different aspects of a single unit of behavior were assessed.

The observer indicated the time of the observation, the activity of the class in terms of whether the pupils were in their regular assigned seats, whether they were functioning in work groups, or engaged in any activity as a total group out of their regular seats. A symbol also was recorded to indicate whether the teacher was involved in definite formal teaching activity in front of the class or in front of a small group at the time the unit of behavior was sampled. The actual behavior of the teacher was observed and scored.

The scoring system was divided into three main sections: (1) Rewarding and Supporting, (2) Punishing and Controlling, (3) Teaching (all units of teacher behavior which did not fall under Section 1 or 2 were scored here). Under this broad teaching section the further distinction was made of whether or not at that moment the teacher was in any type of communicative relationship with the class. The observers first classified a unit of behavior in terms of one of these three broad divisions of the scale. Was it rewarding or supporting in any way? Was it of a punishing or controlling nature? If not, then it fell within the third, or teaching section of the scale. Each of these broad divisions of the scale was completely self-contained, providing all the categories necessary for the complete scoring of any unit of behavior which fell within it. Each unit of teacher behavior that was sampled was scored in a variety of ways. The questions were asked "Is this a nonverbal unit of behavior?" If verbal, how is it phrased (source) in terms of personal pronouns such as I, me, mine (i.e., personalizing it in terms of the teacher), in terms of we or us (relating it to the class), or impersonally in terms of he, she, it, they? To whom is this unit of behavior directed--to the class as a whole, to a sub-group within the class, to an individual boy or girl? What aspects of behavior are rewarded or punished--behavior, effort, ability, actual productions of the child? What techniques does the teacher use to reward, or punish, or teach? For example, in rewarding, does he give special privileges, emphasize or repeat what the child has said, elicit group approval for the child? In punishing, does he make the child do the task over, does he use sarcasm to control, does he reason and point out natural consequences? In teaching does he command and direct, make statements, help, listen to the child, or elicit responses from the child?

Reliability

In total the scale was made up of 86 categories which were carefully defined and required a minimum amount of interpretative judgment on the part of the observer. The reliability between two observers using these categories was adequate. Most of the inter-rater per cents of agreement for various categories were in the 80's or 90's. The following reliability data was gathered at mid-year on the basis of three mornings of synchronized observation by two observers in which 60 observations per morning were obtained, or a total of around about 180 observations. Percentages of agreement are given:

Table 60.

Teacher classroom behavior reliability of observation

Category		Percentage of Agreement	Number of Units on which Based
Classroom activity		.97	188
Formal teaching		.96	188
Section of scale used		.98	188
Source		.98	147
Non-communicative		1.00	41
Direction		.97	147
Punishing:	Aspect	.80	10
"	Technique	.70	10
Rewarding:	Aspect	.83	12
"	Technique	.83	12
Teaching:	Temporal	.91	120
"	Techniques	.93	120
"	Content	.86	120
"	Regarding	.84	120

Examples of units of teacher behavior

A few examples of units of teacher behavior with scoring may make clear the type of data that were obtained.

Unit of Observation: Teacher saying, "Gary, you have some excellent ideas!"

Scoring:

Section: Rewarding.
Source: Impersonal (phrased impersonally as far as teacher is concerned, i.e., no use of I, my, mine, we, ours, etc., by teacher).
Direction: To individual boy.
Aspect rewarded: Evidence of ability.
Technique used: Evaluation of quality of child's idea.

These five scores for this single unit were recorded quickly on the scoring sheet by means of code numbers placed within appropriate items.

Unit of Observation: Teacher was saying, "How many times have I told you to line up when the bell rings?"

Scoring:

Section: Punishing.
Source: Personal (teacher related this remark to herself by the use of the pronoun "I").
Direction: To class as a whole.
Aspect punished: Behavior.
Technique used: Recalls past instructions.

Unit of Observation: Teacher is scoring papers at her desk while the pupils are working independently.

Scoring:

Section: Teaching.
Only score: Non-communicative (i.e., the teacher is not in any communicative relationship with the class).

Unit of Observation: Teacher saying to class, "You see, we call all three of these the tense of the verb or the time of the verb."

Scoring:

Section: Teaching.
Source: Class we (i.e., teacher identifies herself with the class through the use of the pronoun we).
Direction: Class as a whole.
Temporal Orientation: Facilitating to on-going activity (as opposed to anticipating, initiating, or terminating an activity).
Technique used: Verbal statement.
Content: Concerned with expanding, amplifying, relating material.
Regarding: Academic content.

Each teacher was observed for five full mornings of classroom teaching. Between 450-500 time samples of behavior were obtained each morning--or a total of about 2500 samples per teacher. This was done in the fall of the year and again in the spring, yielding in all about 5000 samples of behavior of each teacher. Scoring was simply a matter of adding the number of times a category was used. This could be converted into percentage scores which were meaningful when one wanted to ask such questions as the following:

> "What per cent of the time does this teacher spend in rewarding or supporting activities? In punishing or controlling? Does he tend to punish the child or the class as a whole? To whom are his rewards directed? What does he tend to reward? What techniques does he use in punishing or rewarding?"

In the teaching section of the scale it was possible to identify those teachers who were in constant communication with their pupils as opposed to those who engaged in periods of noncommunicative activity within the classroom. It was possible to state how much time the teacher listens to the pupils, elicits responses from the child, observes ongoing classroom behavior, commands or makes statements. It could be asked to what extent is a teacher concerned with real alternatives or possibilities, as contrasted with amplifying, and relating materials, or in offering information and facts.

This method of assessing teacher behavior seems to offer possibilities for objectively and systematically recording the intricate complexities of teacher interactions within the classroom. The present study was oriented toward pupils within seven upper grade classrooms. Because of the small numbers of teachers observed, statistical treatment of the data is very limited. The use of this method with a large group of teachers would yield normative data of interest and make it possible to relate specific teacher behaviors to pupil behavior, motivation, and achievement.

Spaulding's (1963) work involved the use of a modification of this method in recording interaction between teacher and children in 21 fourth and sixth grade classrooms. Observers coordinated time-sampling of classroom events with continuous tape recordings of the teachers' verbal interaction with children. Teacher interaction scores were related to the children's performance on achievement and creativity tests, and to their self-concepts as reported on a self-rating inventory.

Stability; range of scores

It is assumed that if a given type of teacher behavior is to be related to learning outcomes in the children exposed to it, it must recur with consistent frequency over time. The best measure of this is the fall-spring correlation of the frequency of occurrence of a given category of behavior. Of the 86 original categories, 17 were found to have stability coefficients (fall-spring) of above .60, with the N being 7. These 17 categories have been used in the present data analysis. They are as follows, with the range of scores among the seven teachers being given as well as the stability coefficient.

Categories	Fall-spring r	Range of scores
Total reward, support	.86	1% - 7.8%*
Reward technique:		
by personal interest, attention, accepting without evaluation	.91	0% -68.6%
by evaluation of quality, quantity, correctness	.72	7.1% -58.1%
by role of equality with child	.90	0% -31.8%
Aspect rewarded:		
for innate attributes such as mental ability, physical coordination, personality traits	.65	6.5% -34.2%
Direction of reward:		
toward individual child rather than group	.81	64.5%-100%
Total punishment, control	.66	2.6% - 9.7%
Punishment technique:		
by implying inappropriateness of behavior	.78	0% -38.9%
Direction of punishment:		
toward individual child rather than group	.77	0% -66.6%
Total teaching		
Teaching technique:	.66	56.5% -78.6%
by statement, rhetorical question, verbal observation	.92	18.8%-44.0%
by listening attentively to child	.78	11.2%-37.2%
by eliciting information, facts, opinions, ideas from students	.60	5.9%-26.1%
Teaching content:		
giving intellectual consideration to possibilities, expanding, amplifying, relating to other activities, alternatives	.75	6.4%-26.4%
giving information, facts, textbook knowledge	.80	16.7%-45.3%
Teaching direction:		
toward individual child rather than group	.65	5.8%-70.7%
Total non-communicative; Teacher is engaged in personal activity or absent from room; not in any communicative relationship to class	.63	11.0%-39.0%

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*Per cent in the "Total" categories represents per cent of total sampled behavior. For the subcategories the base is the total frequency of reward, or punishment, or teaching. Thus the first line should read: of the teachers' total behavior, from 1% to 7.8% fell into the category of reward. The second line should be read as follows: of the total reward employed, reward by personal interest occurred not at all in one teacher and 68.6% of the time in the teacher scoring highest.

Reasons for omission from this list of the remaining 69 categories of the total system are, in addition to the fact of fall-spring stability below .60, the following: a category may have occurred very infrequently in this sample of teachers, or occurred frequently and approximately equally in all teachers. The 17 categories listed above (1) differentiate among the teachers observed, (2) occur with roughly equivalent frequency in a given teacher's behavior in both the fall and spring samples.

Analysis of data

In order to increase the predictive power of the teacher behavior scores, fall and spring frequencies were combined, making a composite score for each teacher. These scores were then correlated with child scores on the six child target variables: self-concept, liking for other children, classroom behavior, achievement test scores, attitudes, and creativity test scores, within the four sex-ability groups of children.

Since there is one teacher score on each of the 17 teacher interaction categories for each of the seven classrooms, but different scores on the child target variables for the 50 or so children in each of the sex-ability groups (who come from all seven classrooms) these correlations are of a peculiar sort. For example, on the teacher behavior variable of Total Reward, the N is seven, since every child in the teacher's class received the same score. On the child variable side the N is about 50. Average class size was 28, but the seven classrooms varied from 24 members to 33, and the children were not perfectly evenly distributed in the sex-ability groups, so that one teacher's score may have slightly more weight than that of another in the correlation.

Since the N for the teachers is small and significance of the obtained r's undetermined, the results are by no means definitive and should be examined as fruitful leads for future research. Some replication studies have been completed, and will be cited throughout the discussion.

In the presentation of results, the statements made are based on r's equal to or greater than plus or minus .370. Patterning of the teacher behavior categories as clusters of positive or negative correlations for one or another of the sex-ability groups in each target variable is the most interesting feature of these data, and also the sheer number of correlations appearing within one group. The individual correlations themselves will not be presented, but rather descriptions of correlates of each child target variable, and summaries of the number of correlations found above or below the arbitrary limits of plus or minus .370. Since the prediction of teacher behavior associated with academic achievement is of particular interest, this material is presented in some detail, with the other child targets covered more briefly.

Results

Teacher behavior and child learning outcomes of creativity, liking for other children, task-oriented behavior self-concepts, and attitudes

Children who get high scores on creativity tests tend to have teachers who reward by personal interest and the personality attributes of the child, and who avoid rewarding by evaluation. The teaching tends to be individual, and with much listening to the child by the teacher. Spaulding (1963) found the creativity factors of flexibility and originality significantly associated (negatively) with teacher transactions characterized as formal instruction, controlling through shame and ridicule. Listening by the teacher was positively related to scores on creativity in his data also. These techniques may stimulate motivation toward creativity as represented here by tests of originality, fluency and flexibility. These statements hold for children of superior mental ability; there were very few sizable correlations between teacher behavior and creativity in children of average mental ability in the present data.

Children who show considerable liking for other children in the class tend to have teachers who follow much the same procedures. Additionally, the teachers use much reward, directed toward individuals rather than toward the class group. When the teachers punish, however, it is not an individual matter, but rather is directed toward the group. Teaching is frequently by giving possibilities and expanding ideas and not so much by giving statements of fact. This may well provide more leeway for class interchange and less lecture method. Children may show more liking for others under these teaching techniques because the class atmosphere allows for social interchange without the tension engendered by personal evaluation and personal punishment.

Taking the target of children's task oriented classroom behavior, there are a number of substantial relations with teacher behavior.

Children who work steadily a large proportion of class time have teachers whose behavior is almost exactly opposite to that associated with creativity and liking for others. If children's task oriented work is high, teachers' rewards tend to be given in evaluative terms, to the group rather than the individual, without show of personal interest in individual personalities. Teachers tend to teach by statement, and giving information. They also frequently remain out of communication with the class.

These findings are interesting in consideration of the teacher as a motivating agent. The first two descriptions (for creativity and liking for others) suggest techniques displaying interest in the individual child and his ideas. The children exposed to this show creativity and liking for other children. Task-oriented work--the quiet, industrious classroom honored for centuries as a sign of teaching efficiency, is associated with group methods and frequent evaluation. Motivation is probably directed toward conventional work rather than new ideas or child-child affiliation.

Two other learning outcomes measured here on the children, self-concept and attitudes toward school activities, proved independent, for the most part, of the teacher behavior categories. Clinical data provides considerable evidence that teachers do influence both self-concept and attitudes, but possibly effective teaching techniques are, for these aspects of the child, more idiosyncratic than for those child measures mentioned above. If this were true, correlations based on group data from a small sample would be insignificant, and this was the present finding. Spaulding (1963) however, found considerable relation between self-concept and teacher behaviors which were characterized as acceptant, individualized, and facilitating of task-oriented behavior and avoiding of negative evaluation. His study employed a larger number of teachers: 21.

Teacher behavior and child achievement

Superior and average boys. Table 61 gives a breakdown of the teacher behaviors associated with child scores on the achievement test composite. Seven categories of teacher behavior are positively related to achievement in the fall for superior boys, none for average boys. In the spring, six are positive for superior boys and one for average boys. Let us pause to consider that our instruments are designed to measure relationships based on our hypotheses. We anticipated that teaching techniques should make a difference in a child's achievement. Yet we can see in Table 61 the paucity of such relationships, save for superior boys. Did we, as we are hypothesizing what our teachers are doing, base and anchor our hypotheses in relationships that affect (or co-vary with) the superior child's achievement? Or are these relationships a fault of poor sampling?

It would seem reasonable to suppose that specific methodologies will affect each ability group differentially. That is, what may be a desirable technique for bright boys may be unsuitable for average boys. Teaching techniques are based on the concept of the normal distribution of traits and the probabilistic notion of behavior. Little research has

Table 61.

SUMMARY TABLE OF CORRELATIONS, TEACHER INTERACTION SAMPLE AND ACHIEVEMENT TESTS, TOTAL COMPOSITE

+ indicates positive correlation above .370
- indicates negative correlation below -.370

	Fall scores				Spring scores			
Positive relations:	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
Reward by emphasis	+					+		
Reward by personal interest*			+					
Reward innate attributes*			+					
Punish by reasoning	+				+			
Punish by asking child explain	+				+			
Total non-communicative*	+				+			
Teaching by command, request, recommend	+				+			
Teaching by listening*	+		+		+			
Teaching by possibilities, alternatives, amplifying *	+				+			
Total positive relations	7	0	3	0	6	1	0	0
Negative relations:								
Reward by evaluation *			-					
Reward subgroup			-					
Total source "T"			-				-	
Total teaching *	-				-			
Total negative relations	1	0	3	0	1	0	1	0

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* Starred items are those for which fall-spring stability was found to be over .60. The other, less stable, categories are included for interest.

been conducted on teaching methodology; rather, current and past teacher techniques are based on the intuitions and reasoning of some wise educators. We do not reject their wisdom but we do raise the question of what group it was on which they based their observations. Who stimulated their perceptions to the point that they made note and claim that this technique or this method, this procedure is the desirable way? We would guess that the sparkling, steady, attentive achievement-oriented boy provided them with the frame of reference for their hypotheses and for the testing of their hypotheses in their classrooms. If one were to extend this theoretical model further, one might see in it the opposing frameworks of the traditional educators have known for years that bright children will learn, and they have set their goals for their children who are capable of learning--historically, superior boys.

The progressives were deeply concerned for those children who were not learning, i.e., the less talented academically, and challenged the narrow academic goal of the traditionalists. Yet the progressives' methodology has never fully been adopted, as Cremin has stated (1961). The vigor of their insight became dissipated in their reforms and they lost sight of "what they would have children be." The emphasis of modern educators on problem-solving has been far from implemented in the nation's classrooms, but to the limited extent that it was adopted, the concern of parents and educators turned from the below-average and average child back to the renewed need for a program for the gifted. The early fifties saw a need to implement special programs for the gifted and also a turn back to content and teacher-directed teaching. Was this again using our superior boys as a frame of reference?

It looks as if we have fought one methodology battle on an either/or basis rather than asking: what methodology for which group? The superior child may early in his school experience have arrived intuitively at study techniques that lead to learnings in school (r, achievement and task-oriented behavior = .314). Explaining less than 10 per cent of the variance does not take us too far down the road of clarity, but it is better than we have had before.

The cry for more subject matter nationally, and the tendency for curriculum to move in this direction, may only reflect our inability to solve the technology of teaching superior boys. Concerned modern educators are still calling attention to the fact that not all the needs of all children will be met by a subject matter approach. Shall we swing again to all or none panaceas, or shall we build heuristic models to test techniques in relation to subgroups of our schools, isolating variables of teaching and learning? What to teach, how to teach, and how to motivate the superior boy or girl, the average boy or girl, and the below-average boy or girl? This is the beginning upon which to build.

We see that reward by emphasis, punishing by reasoning, punishing by asking explanation, total noncommunicative, teaching by listening, and by offering possibilities, alternatives, and amplifying are the techniques that are positively related to superior boys' achievement. These are techniques that traditionalists could easily use with superior boys with success, but for average boys and girls a more active guidance in problem-solving techniques may be advisable. The superior girl represents a different constellation of requirements.

Superior girls and average girls. For superior girls we note that teaching techniques of reward by personal interest, reward innate attributes and by listening are positively related to achievement in the fall--while no correlations reach acceptable size in the spring. This is a curious dilemma, but consistent with what we shall see below. Superior girls are much more tied to social goals and interpersonal relations than boys as we have noted above. Total source "I" teaching interaction correlates -.46 in the fall with composite achievement; -.44 in the spring. Directed reward by evaluation does not aid superior girls' achievement. This is similar to Spaulding's (1963) finding of a negative correlation with teacher's use of total class punishment and girls' academic achievement.

Girls, it would seem, are more affected by open censure or praise. Perkins (1957) has shown that boys' ideal self and self-concept are further apart in grades four to six, whereas girls have self-concepts and ideal selves that are very similar. We would postulate that boys can "take" public censure, as they see themselves as not having achieved their ideal self; therefore criticism does not become ego threatening. However, girls would see criticism as an evaluation of their ideal self as well as their present self. This is a more threatening evaluation. We have noted previously the positive correlation of achievement composite and need affiliation for superior girls and absence of a relationship between PMA sub-tests and spring achievement except for the verbal scale.

In addition, we have previously seen the clear linking of social interests and school achievement in these girls. Meyer and Thompson (1956) have found that boys received more disapproval than girls in a sample of sixth grade classrooms. It is possible that the present findings shed some light on this. Girls probably behave better than boys on the average, but additionally teachers may consciously or unconsciously realize that public evaluation does not help girls in working toward academic goals, whereas for boys, especially bright boys, such public praise or disapproval may be facilitating. Spaulding (1962) found that girls show better reading achievement in classrooms where teachers tended to administer disapproval in private, and performed less well academically than would be expected, in rooms where teachers tended to direct public disapproval for misbehavior toward sub-groups or individuals rather than toward the class as a whole.

Summary

Taking the number of substantial correlations with teacher behavior found for all six child measures, over twice as many relationships emerged for the children of superior mental ability as for those of average ability (Table 62). Does this mean that what the teacher does makes more difference in the performances and attitudes of bright children than in those of average ability? This phenomenon appears particularly in the correlations involving creativity in children, liking for other children, and, as has been discussed above, achievement test scores. For teaching techniques related to task-oriented classroom able 62.

Teacher
Classroom Behavior Correlated with Child
Target Variables: Number of Correlations in
Excess of + or -.370*

	BOYS		GIRLS			
hild Target Variables	Superior mental ability	Average mental ability	Superior mental ability	Average mental ability	Total of those possible	% of those possible
umber of children	47	48	49	51		
. Self-concept	0	1	0	0	1 of 136	1%
. Liking for other children	12	2	9	2	25 of 136	18%
. Task-oriented classroom behavior	8	9	17	14	48 of 136	35%
. Achievement test scores	8	0	4	0	12 of 136	9%
. Attitudes toward school	0	3	4	1	8 of 136	6%
. Creativity: Plot originality	1	2	2	4	9 of 68	13%
Things fluency	4	2	6	1	13 of 68	19%
Things unusual	3	0	6	2	11 of 68	16%
Object synthesis	6	1	6	0	13 of 68	19%
(Total creativity)	(14)	(5)	(20)	(7)	(46 of 272)	(17%)
otals, all child measures	42	20	54	24		
of 238 possible for each group	18%	8%	23%	10%		

N = 195 children, 7 teachers. Same teacher score used for each of the children (approximately 28) in the class.

or each of the first 5 child target variables, there are fall and spring scores, correlated with 17 teacher behavior variables - 2 x 17 = 34 possibilities in each cell. 5 target variables x 34 for each cell = 170.

or each of the creativity tests given once only, there are 17 correlations - 17 possibilities in each cell, 4 tests x 17 for each cell = 68.

otal possible correlations for each group - 170 + 68 = 238.

oing across the table for each of the first 5 child target variables, there are 34 possibilities in each cell, and 4 groups of children. The right hand columns show the number of correlations found (at the arbitrary significance level) out of 34 x 4 = 136 possibilities. For the creativity tests, the possible number is 17 x 4 = 68.

behavior, all sex-ability groups show the same trends. Teacher behavior is associated with work behavior in the total class group, regardless of ability level of the child.

On the other hand, teacher ratings of personality characteristics of the children (Table 63) showed highly significant correlations between favorable perceptions by the teacher and various child dependent variables in all sex-ability groups. Creativity measures again show more significant correlations in the superior than in the average children, but correlations involving self-concepts are more frequently significant in the two groups of average mental ability.

Although these data are based on a small number of teachers, the results make sufficient sense to make further testing important. It is suggested that (1) there are teacher behavior techniques which are associated with the creativity, achievement, and liking for other children in brighter children, and (2) that favorable perceptions of the child by the teacher are associated with good self-concepts of the less bright.

Factor Analysis

The correlation matrix of 17 variables (for boys, the girls' matrix was practically identical) was subjected to a Principal Factor Analysis (Harmon, 1960), and five latent roots greater than one were rotated analytically to a Varimax (Kaiser, 1958) solution. The results are presented in Table 64 and on the following pages. All loadings under .40 are eliminated from the table. Names of factors are purely descriptive.

Table 63.

Teacher Perceptions of Children (ratings) Correlated With Child Target Variables: Number of Correlations Significant at the .05 Level.*

	BOYS		GIRLS			
Child Target Variables	Superior mental ability	Average mental ability	Superior mental ability	Average mental ability	Total of those possible	% of those possible
Number of children	47	48	49	51		
1. Self-concept	2	10	2	10	24 of 136	18%
2. Liking for other children	2	2	4	7	15 of 136	11%
3. Task-oriented classroom behavior	5	7	4	6	22 of 136	16%
4. Achievement test scores	13	14	20	9	56 of 136	40%
5. Attitudes toward school	8	2	2	9	21 of 136	15%
6. Creativity: Plot originality	1	1	7	0	9 of 92	10%
Things fluency	5	0	1	0	6 of 92	7%
Things unusual	7	0	0	0	7 of 92	8%
Object synthesis	0	2	1	3	6 of 92	7%
(Total creativity)	(13)	(3)	(9)	(3)	(28 of 368)	(8%)
Totals, all child measures of 262 possible for each group	43 16%	38 15%	41 16%	44 17%	166 of 1048	16%

* N = 195 children, ratings for each child by his teacher

For each of the first 5 target variables, there are fall-fall, fall-spring and spring-spring correlations with 11 or 12 teacher ratings (teachers rated mental ability once only). 11 x 2 + 12 = 34 possibilities in each cell. 5 target variables x 34 for each cell = 170.

For each of the creativity tests, given once only, there are 11 + 12 = 23 possibilities in each cell. 4 tests x 23 for each cell = 92

Total possible correlations for each group = 170 + 92 = 262. For 4 groups, 1048.

Total possible correlations for each of the first 5 child target variables - 34 x 4 = 136.

For the creativity targets, there are 92 possible; for total creativity, 368.

Table 64: Normal Varimax Factors for 17 Variables of Teacher Classroom Behavior

Teacher variable	Communality	FACTORS 1	2	3	4	5
Reward N=7						
1. Total reward	1.001		.82			.40
2. By personal interest	.9673	.88				
3. By evaluation	.9973	-.95				
4. By role of equality	.9907				.98	
5. For innate attributes	.9198	.87				
6. Toward individual	.9933	.78	-.43		-.45	
Punishment						
7. Total punishment	1.002		-.88	.45		
8. By imply inappropriate	.9994			.55	-.74	
9. Toward individual	.6334	-.72				
Teaching						
10. Total teaching	.9863			.99		
11. By statement	.9956	-.70	.58			
12. By listening	.9826	.86		-.41		
13. By eliciting	.9675				.83	.44
14. Give possibilities	1.001	.40		-.73		
15. Give information	.9930		.56		.75	
16. Toward individual	.9931					.92
Non-communicative						
17. Total non-commun.	.9965			-.96		
		EIGEN VALUE				
		5.679	5.023	2.528	1.848	1.342

Teacher Classroom Behavior Factors

Factor 1	**Listening, and reward to individual on the basis of personal interest**	**Loading**
rt	Reward technique: by personal interest, attention	.88
	Aspect rewarded: innate attributes, personality	.87
	Direction of reward: toward individual rather than group	.78
tt	Teaching technique: by listening attentively to child	.86
	Teaching content: giving consideration to possibilities, expanding, amplifying, relating	.40

Factor 1	(continued)	Loading
rt	Reward technique: by evaluation of quality, quantity	-.95
	Direction of punishment: toward individual rather than group	-.72
tt	Teaching technique: by statement, rhetorical question	-.70
Factor 2	Warm to group, lecture method	
T	Total reward, support	.82
	Teaching technique: by statement, rhetorical question	.58
	Teaching content: giving information, facts, textbook knowledge	.56
	Direction of reward: toward individual rather than group	-.43
T	Total punishment, control	-.88
Factor 3	Teacher centered, strict punishment	
T	Total punishment, control	.45
	Punishment technique: by implying inappropriateness of behavior	.55
T	Total Teaching	.99
	Teaching technique: by listening attentively to child	-.41
	Teaching content: giving consideration to possibilities, expanding, amplifying, relating	-.73
T	Total non-communicative	-.96
Factor 4	Teaching content on children's level	
	Reward technique: by role of equality with child	.98
	Teaching technique: by eliciting information, facts, opinions, ideas from students	.83
	Teaching content: giving information, facts, textbook knowledge	.75
	Direction of reward: toward individual rather than group	-.45
	Punishment technique: by implying inappropriateness of behavior	-.74

Factor 5	Warm individualized teaching	Loading
	Total reward, support	.40
	Teaching technique: by eliciting information, facts, opinions, ideas from students	.44
	Direction of teaching: toward individual rather than group	.92

Those categories marked rt, tt, and T are mutually exclusive of another marked with the same letter.

Discussion

These factors seem to be sound in behavioral as well as statistical terms, i.e., it is easy to imagine teaching styles in which these behaviors clustered together. Spaulding's (1963, p.66) data show several components which resemble these; for example, his component 5 is similar to our Factor 1. Component 5 is described as: "Calm, acceptant transactions in general with private, individualized instruction and a concern for divergency, attention to task, and the use of task appropriate procedures and resources."

Because of the exploratory nature of this part of the research, factor scores have not been correlated with the child target variables. As we accumulate data of these sorts from new samples of teachers varying in geographical location, teaching philosophy, and other ways, we will begin to firm up sound knowledge on the influence of teaching style on children's motivation and school learning.

SUMMARY

BACKGROUND

Efforts to strengthen and toughen the elementary school curriculum have run into two major problems. These are first, the lacks in our knowledge with reference to specific effects of teaching methods, and secondly, the values attached to one or another outcome of the total educational process. Both problems stem from the breadth and depth of objectives sought for the elementary school child, and also from the strong and sometimes prejudiced values held with reference to which outcomes are to be stressed as of primary importance. The present study is designed to shed light on these two problems.

OBJECTIVES

1. To develop instruments for measurement of significant outcomes of elementary education in children's attitudes, performances, behaviors. Six such outcomes have been measured: 1) self-concepts, 2) liking for other children, 3) task-oriented classroom behavior, 4) achievement test scores, 5) attitudes toward school activities, and 6) creativity test scores. These are the target variables in the present design.

2. To develop measurement techniques for assessing various of the classroom conditions which are presumed to modify: a) children's motivation to achieve the outcomes, or targets listed above, and

b) their work output toward these ends. Measurement of selected aspects of these conditions is described in the next pages.

3. To examine interrelationships of a) the target variables, or outcomes of the classroom learning situation, and b) the selected modifying conditions.

4. To establish useful prediction of the target variables, both from talents and attitudes of child subjects and from the behavior and attitudes of the classroom teacher and classmates in relation to the children concerned.

The variables measured are listed on the next two pages. The first page shows direct measures of children: i.e., instruments or tests designed to provide assessment of the child subjects on the six target variables, and also on some other characteristics thought to influence their school attainment.

Measures on most variables were obtained twice during one school year: early fall and late spring. Fall measures are regarded as initial status of the child, or resources which he brings with him as he starts the school year. Spring measures are the target variables, or learning outcomes of the year.

Classroom conditions thought to modify children's development with respect to the six targets are shown on the second page. Here the variables are classified as possible predictors of child attainments. They include the 1) teachers' classroom behavior in interaction with children; 2) the teachers' attitudes, or preferences, with regard to school activities; 3) the teachers' perceptions of the individual children; 4) the

MEASURES OF CLASSROOM CONDITIONS

Predictor Variables	When Obtained	N	Method of Measurement
1. Teacher classroom behavior Scores on 17 categories, e.g., reward, evaluation, teach by presenting alternatives.	Fall and Spring	7[*]	Systematic observation
2. Teacher attitudes toward school activities 10 factor scores	Spring	7	Attitude scale
3. Teacher perceptions of child[**] Attractive appearance Physical ability Work habits Social virtues Happy qualities Creativity Intrinsic interest Mental ability Seek status: academic Seek status: social Gain affection: peers Gain affection: teacher	Fall and Spring	195	Teacher rating
4. Teacher liking of child	Spring	195	Social distance scale
5. Peer perceptions of child Attractive appearance Physical ability Work habits Social relations teacher Mental ability Social virtues	Fall and Spring	195	Peer nominations
6. Peer liking of child Liking by same sex Liking by opposite sex	Fall and Spring	195	Social distance scale

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[*] The subjects were 195 children, divided in seven classrooms, each with one teacher. For the first two measures, therefore, the N is 7 with the same teacher score being used for each of the children in the class. The remainder of the measures have an N of 195, since teachers and peers rated each child individually.

[**] Used both as a measure of child's resources and as an indirect measure of classroom conditions.

DIRECT MEASURES OF CHILDREN

Target variables: learning outcomes; final status; consequents (spring measurement)

Predictor variables (fall measurement): resources of child, initial status

	When Obtained	N	Method of Measurement
1. Self-concept			
Happy qualities	Fall and Spring 1958-59	195	Self-report inventory
Overall mean self-rating			
Overall satisfaction			
Overall expected improvement			
9 sub-areas			
2. Social relations	Fall and Spring	195	Social distance scale
Liking for same sex			
Liking for opposite sex			
(Liking by others shown on next page)			
3. Classroom behavior	Fall and Spring	195	Systematic observation
Task-oriented work			
Social work			
4. Achievement	Fall and Spring	195	Standard tests Science Research Associates
Composite			
Reading composite			
Work study composite			
Arithmetic composite			
5. Attitudes toward school activities	Fall and Spring	195	Attitude scale
Academic			
Intensive study			
Overall mean			
5 factor scores for each sex	Spring		
6. Creativity	Winter	195	Experimental tests
Plot originality			
Things fluency			
Things unusual			
Object synthesis			

Other resources of child used as predictor or initial status variables

7. Sex	Fall	195	(Teacher rating
Attractive appearance)			(Peer nomination
Physical ability)			
8. Mental ability	Winter	195	Standard test Primary mental abilities
Composite			
Verbal			
Space			
Reasoning			
Number			
9. Motivation	Winter	195	Thematic apperception test
Need achievement			
Need affiliation			
Need power			
Anxiety over achievement	Fall	195	Teacher rating
Seek status: academic			
Seek status: social			
Gain affection: teacher			
Gain affection: peers			
Intrinsic interest			

teachers' personal liking for each child; 5) the peers' (classmates') perceptions of child, and 6) the peers' liking for each child.

The rationale for including perceptions and liking of the child by teacher and peers as a classroom "condition" is based on the assumption that perceptions or opinions about a child are reflected in covert or overt behavior toward him. Such behaviors, probably repeated many times during the school year, constitute a modifying influence of potential power for change in the child's development.

Most of these measures were obtained both in the fall and in the spring. Fall measures represent initial behaviors and perceptions as the new class group begins the year; spring measures a final assessment after approximately eight months together.

Subjects were 195 5th and 6th grade children distributed over seven self-contained classrooms. Children were generally above average in mental ability (mean I.Q. about 115) and from an upper middle class suburban area. Teachers were all experienced and generally oriented toward a middle of the road, child-centered style of teaching. They were all cooperative toward the objectives of the research.

Hypotheses as to the association between predictor and target variables were made separately for four sub-groups of the 195 subjects: 1) boys of superior mental ability, who scored above the group mean of I.Q. 115 on a composite score derived from the Primary Mental Abilities test; 2) boys of average mental ability, who scored below the group mean; 3) girls of superior mental ability, and 4) girls of average mental ability, selected in the same way. Each group numbered about 50.

Correlations were run between the six classes of child target variables and the predictor variables within each of these four ability groups. The results are discussed chiefly in terms of prediction of the spring child target variables by fall or spring predictors, although the distinction between target and predictor variables is not held to in all the analyses. The correlational technique permits examination of interrelationships found in the fall (fall-fall correlations) and in the spring (spring-spring) as well as fall-spring correlations. One child-target variable is considered at a time; predictor variables for each include the other five "targets" as well as the classroom conditions predictor variables.*

The results will be presented first, in terms of the six target variables as predicted by child variables and teacher/peer perceptions of the child, and, at the end of this summary, in relation to the teacher classroom behavior and attitudes.

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*Most of the "prediction" is done through zero order correlations. The intercorrelation between variables makes the syndrome or patterning description used here less than perfectly accurate. The justification is that partial or multiple correlations, or multivariate methods, present difficulty of interpretation if applied to practical guidance of children. They are suitable for abstraction of the variance solely attributable to a given variable, but in a state of nature many variables are not in truth independent of one another.

The results reported are often discussed as if they applied only to children who score high on one or another target variable. Actually, of course, the correlational technique employed shows relations between two variables over the range of children in the group; if the correlation is significant and positive it means that the two variables are high together in some children, medium together in some, and low together in some. And most correlations reported here are not so high but what considerable error is present in the predictive value from one variable to another when individual prediction is the aim.

RESULTS

Self-concept as a target variable

1. For this sample of 5th and 6th grade children, self-concept measures are found to be highly generalized, with strong intercorrelations from one area of ability to another.

2. Stability of self-concept, from fall to spring, is generally high. Boys of average mental ability (below the group mean) show lower stability.

3. Accuracy of self-concept varies in the different sex-ability groups depending on the outside measure used as a standard of accuracy.

3.1 Boys of superior tested mental ability show good agreement between self-concept of mental ability and test scores; i.e., they are accurate. They show less agreement with teacher ratings of mental ability, and little with peer nominations for mental ability.

3.2 Boys of average mental ability show no agreement between test scores and self-concepts of mental ability. However, there is good agreement in this group between teachers' judgments and self-concepts.

3.3 Girls of both ability groups show no agreement between self-concept and test scores. Correlations are moderate between self-concept on the one hand, and teacher and peer judgments on the other.

4. Height of self-concept is predicted by different variables in the four sex-ability groups.

4.1 Self-concepts of superior boys are best predicted by 1) attitudes toward school, 2) scores on creativity tests, 3) scores on mental ability tests. Of little or no value, in the prediction of self-concepts in these boys, are the variables deriving from the perceptions of significant others in the child's classroom environment -- the teacher and the peers. These superior boys appear independent of others' opinions in reporting their own self-concepts.

4.2 Self-concepts of the average boys in the sample are predicted by a quite different pattern of variables. Self-concepts are positively related to 1) task-oriented work in the classroom 2) liking by the teacher, and 3) ratings of motivation to gain affection from teacher and peers.

4.3 For the superior group of girls, the predictor variables resemble those for the superior boys, with the exception that test scores on mental ability correlate negatively, if anything, with self-concept. Furthermore, the mean mental ability self-concepts of these girls is lower than those of the superior boys, although the two groups do not differ in tested mental ability.

4.4 The average group of girls shows self-concepts which are positively predicted by 1) attitudes toward school, 2) fluency measures of creativity and 3) fall measures on achievement test scores. Spring achievement test scores do not predict self-concept. In addition, favorable perceptions by teachers and peers are positively related to self-concept. In this way, they resemble the average boys and differ from the two groups of children of superior mental ability.

5. Satisfaction with self -- an overall measure which does not involve comparison to the class group -- is predicted for all groups by 1) social relations of liking for other children and 2) favorable attitudes

toward school. This pattern suggests a generalized reaction toward self, classmates, and school activities: positive in some children, negative in others.

6. Expected (or anticipated) improvement of self shows predictor variables which differ for the ability groups. The two groups of superior children show positive relations between expected improvement and liking for other children, while this is not regularly the case with the average children. The same is true of the correlations between expected improvement and tested mental ability -- generally positive in the superior groups and negative in the average groups.

7. These results suggest the following provisional conclusions:* For children of superior mental ability in this sample, good self-concepts accompany favorable attitudes toward school, and ability to think in original, creative ways. For children of lesser mental ability, self-concepts are highly dependent on the favorable opinions of significant others in the classroom. We hypothesize that anxiety over their own achievement in these less bright children may be reduced when teachers and peers are supportive, thus making reasonable self-esteem a possibility in spite of the handicap provided by their less good mental ability.

Social relations in the classroom

1. Correlates of liking for other classmates show wide sex differences. Girls show high scores on liking for others in association with good achievement and work orientation. Correlates of liking for others in

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*Replication studies are now underway.

the groups of boys suggest rejection of academic work in favor of sociable playboy attitudes.

2. Correlates of popularity, or liking by classmates, in this sample of children, are: industrious classroom work, good scores on achievement tests, friendly attitudes toward other children, and favorable perceptions by teacher and peers on a number of characteristics. The group of boys which is below the mean in mental ability, however, shows few predictors of popularity. For them the way to achieving liking by classmates is independent of the determinants tested here.

3. Liking by the teacher shows quite different determinants for bright and less bright boys. Positive predictors for the superior boys are the boy's attitude of expecting to improve over the year, his friendly relations with peers, and his social virtues, or consideration for others. In the case of the average boys, the teacher tends to like those who show happy qualities and seek to affiliate with the teacher. For both groups of girls, good achievement and liking for other children are associated with liking by the teacher.

4. Characteristics of well-liked children reported here probably represent the norms and values of the peer group from this academically oriented, upper middle class community. Child characteristics associated with liking by the teacher suggest the values of the teacher, and the kinds of children which are found to be a real satisfaction in teaching for him.

Classroom work behavior of children

1. Sex and ability groups did not vary in the sheer proportion of the school day spent in task-oriented work behavior. Girls showed somewhat

more *social work* behavior than boys. Frequency of the two kinds of work was predicted, however, by different things for the four sex and ability groups, and had different consequents for children of the four groups.

2. For boys of superior mental ability, *task-oriented* classroom behavior was found to be associated, in this sample, with withdrawal from other children at the beginning of the year. Toward spring, those bright boys who worked independently a large proportion of the time were found to be high scoring on achievement tests and well respected by the teacher.

For the *average* boys, the predictors were found to be quite different: the boys who worked a good proportion of the time reported happy qualities, good self-concepts overall, and moderately positive attitudes. By spring, however, the correlations with self-concept dropped.

3. *Superior* boys who are high on *social work* behavior tend to be attracted to many of their classmates, to have creative modes of thought, to be moderately favorably viewed by the teacher, and to be highly regarded by classmates.

4. *Superior* girls also show a social withdrawal pattern in connection with *task-oriented* work, but in their case, this is not accompanied by favorable regard from teachers or peers, nor by good scores on achievement tests. The data suggest that independent task-oriented work is seen by teacher and peers as a legitimate or effective means of striving for bright boys but as somehow inappropriate or undesirable for bright girls of this age.

5. *Superior* girls scoring high in *social work* behavior are also high on liking classmates and creativity, as were the bright boys.

Additionally however, they do well on achievement tests, and are liked very well by the teacher, who judges them favorably in a number of respects.

6. For the groups of boys and girls of average ability, social work behavior has few positive correlates and is a negative predictor, by spring. Task-oriented work, on the other hand, appears instrumental to good interpersonal relations with teacher and classmates.

7. Work behavior is seen as a child's effort to achieve goals held by himself and by others for him. The results reported indicate that the utility of task-oriented and/or social work behavior as instrumental to achievement and interpersonal goals, depends on a) the talents and attitudes the child brings with him to the classroom, and b) the expectations and reactions they meet from significant others in the classroom group: the teacher and peers.

Sheer frequency of independent task-oriented work does not guarantee a payoff in better scores on achievement tests for most of the children in this sample, but it is associated with good self-concepts and/or liking by others for the children below the group mean in mental ability. Socially oriented work behavior is apparently seen as desirable for the superior children, but not so desirable, perhaps an interference to more important things, for the less bright children.

Prediction of achievement test scores

1. Prediction of academic achievement scores by Primary Mental Abilities scores was good, as expected, in all groups except the superior girls. For this group, it was suggested that the 5th and 6th grade years

are especially conflictual in terms of self-image; achievement commensurate with ability, in girls for whom high achievement should be easy, may conflict with a pre-adolescent image of success in a feminine, submissive and non-competitive role.

2. Prediction of spring achievement by fall achievement scores is very high, as has been reported by many investigators previously. Among other consequences of this fact, it was expected that peers and teachers observing daily performances would be accurate predictors of a child's academic standing in the group, and under certain conditions would generalize their perceptions of academic standing to other areas of development.

3. For the superior group of boys, the significant relationships with achievement fall clearly in an academic syndrome; that is, teachers and peers see these boys as possessing good work habits, interests, skills and abilities in the academic areas. Other qualities, however, are not seen as significantly related for these boys; they are not seen as more attractive, happier, better physically, nor is their achievement related to their social relations. Teachers like the boys of superior ability better as a group than those of average ability, yet achievement is correlated with teacher liking for average, but not for superior boys. Superior boys may put their classroom work behavior to good use in terms of achievement; unlike the other groups, the more time they spend in classroom work behavior the more they produce on achievement tests.

4. Among boys of average mental ability (below the mean of the group), those who achieve well relative to their ability are liked by other children and by the teacher; those who do not achieve are generally not

liked. The perceptions of teacher and peers appear to generalize more in relation to achievement for these boys than for the superior boys; i.e., if they achieve relatively well they are seen as attractive in appearance and happy in disposition as well as showing favorable academic characteristics.

5. Among girls of superior ability, achievement is not nearly as highly correlated with aptitude (PMA) as it is for other groups. High achieving girls are not seen as seeking academic or social status through achievement. Rather, they appear to show achievement as instrumental to social and affiliative needs, and in association with much liking for other children. Those superior girls who are creative, according to test results, do not generally achieve better than those who are not; creativity is not channelled into achievement as it is for other groups.

6. The girl of average mental ability, who must work harder to reach an adequate level of achievement, shows quite a different set of correlates in connection with achievement. PMA mental ability and creativity test scores (fluency) are both good predictors of achievement. While in the fall the better achieving average girls show better self-concepts than the lesser achieving, by spring the average girl who is achieving well (for her), is dissatisfied with her performance. Perhaps she is comparing herself to girls of higher native ability. Status seeking, in connection with achievement, is not at all prominent; in this, both groups of girls are similar.

Attitudes toward school

1. An 80 item attitude scale was used to elicit preferences of children and teachers for a number of subject areas and types of school activities,

for example: handwriting drill, handwriting in everyday usage, science research reading, having long periods in which to go into things more deeply, teacher letting children move around and talk freely, being class officer. Factor analyses of 68 of these items provided five factors for boys' attitudes, and five for girls. The factors were given descriptive labels on the basis of items showing high loadings.

2. For boys of superior mental ability, high scores on Factor I (interest in efficiency) are associated with good self-concepts, achievement and fluency of thinking. The behavior of these bright boys is consistent with the attitude scores; they attend to the business at hand, are involved with ongoing activity whether it is an individual or collaborative endeavor. On the other hand, they significantly avoid involvement in non-academic activities. The general picture of these boys with positive attitudes toward their school experience is of boys whose behavior reflects a purposiveness and a desire to do well in school. Their achievement is good. Perhaps the word that characterizes them best is "appropriateness" both of attitude and learning.

3. Boys of average ability show the same picture in two respects: high scores on Factor I are associated with good self-concepts and high ratings on seeking status, particularly social status. In other respects, correlations for the average boys differ from those for superior boys: for average boys, Factor I attitudes are independent of achievement, creativity, and the various characteristics rated by teachers and peers. Evidently the interest in efficiency promotes good feelings about the self and reflects underlying motives for gaining social status; without the ability to back it up achievement and reputation do not come along.

4. There are no significant predictors of Factor II (prefers structure) or Factor III (anxiety about competition) for the superior boys. In the average boys' group, high scores on Factor II are associated with high need affiliation, liking by the teacher and by other boys. Teachers see these boys as having good work habits. For the less bright boy, then, holding Factor II attitudes results in effective work on drill type activities, and considerable esteem from others in the classroom. The affiliative needs may provide impetus to achieve this esteem through positive reactions to drill, structure, and anxiety about achievement.

5. Average ability boys show a positive picture in connection with Factor III. They have good self-concepts, show high levels of task-oriented work, and are favorably regarded by their classmates. Evidently this group of attitudes represents a constructive reaction to the competitive school situation in the case of the average boys. Ascribed rather than achieved status releases them from an unequal competition with the brighter boys.

6. Correlates of Factor IV (individual action, non-intellectual) reflects a non-academic orientation in both groups of boys.

7. Superior boys' scores on Factor V (control of environment) are associated with fair achievement and good mental ability. However, bright boys scoring high on this factor are not seen as creative or attractive by their teachers. Average boys are not outstanding on any of the child variables studied, but their peers see them as getting along well with teachers.

8. Superior girls scoring high on (girls') Factor I (interest in efficiency) show good work habits, both individual and social. Insofar as their self-concept is concerned, these girls are quite positive, especially

with regard to their intellectual ability and performance. This estimate is corroborated by teachers' judgments. Teachers also rate these girls as high in intrinsic interest and work habits, and the girls' achievement is good. Unlike the bright boys showing this pattern of attitudes the bright girls are not noted for academic seeking of status. Curiously enough they are not seen as outstanding by their peers, nor liked particularly by the other girls. Teachers regard them favorably, perhaps because of the interest in efficiency, but this does not provide appeal for other girls of the class.

In the girls of average ability, the same attitudes are independent of achievement, mental ability, and task-oriented work. High scoring Factor I average ability girls show low tested creativity. However, they make a good impression with teacher and classmates in these various respects. They are rated by others as high on creativity, mental ability and work habits. They themselves feel satisfied with their accomplishments. It is apparent, then, that it is not so much their actual production as their style of student behavior that is most convincing both to themselves and to those around them.

9. Factor II items show concern about anonymity and remaining in non-intellectual settings. These attitudes are impressively consistent with the correlated material that we have on these girls. This is especially so in the case of the average ability girls, who are seen as poorly motivated by their teachers. Their peers concur in a low estimate of their intellectual capacity. Actually these estimates are generally correct as indicated by low Primary Mental Abilities scores and poor achievement records. There

are very significant negative correlations with self-concept scores in the average girls, and weak positive ones for girls of superior ability.

As far as the social relations of these girls are concerned, the picture is not strong either positively or negatively, although it is a bit more positive in relations with the same than with the opposite sex. Both superior and average girls show negative correlations between Factor II and need affiliation. Peers' nominations of these girls are so infrequent as to suggest that they succeed in remaining anonymous or invisible in the classroom setting.

Behaviorally these girls are not outstanding for task-oriented work or its lack. Apparently, therefore, their non-intellectual bent is not acted out, but rather, is hidden under their cloak of normative behavior which increases the likelihood of their preferred anonymity.

10. Girls scoring high on Factor III (active participation, non-intellectual) are not outstanding for other characteristics. In relation to Factor IV (potential clubwoman) scores, girls tend to exhibit socially initiative rather than academic behavior. On the other hand, high scoring girls on Factor V (group participation, unassertive role) appear as scarcely visible either positively or negatively to teacher or classmates. Behaviorally, like the high scoring Factor II girls, they seem to achieve the unassertiveness they indicate in their preferences on the attitude scale.

Correlates of creativity test scores

1. Boys of superior mental ability and girls of average mental ability both show a pattern of correlates, for the three of the four types of creativity sampled, which involves channelling of fluency into academic

productivity. This apparently is found desirable, particularly for the boys, by teachers and classmates of this sample. Highly fluent superior boys receive favorable ratings on a number of characteristics.

2. Clever, humorous responses to the Plot Originality test are associated with good self-esteem and enjoyment of social and school activities in girls of superior ability.

3. For boys of average mental ability, the four creativity tests used here did not reveal correlates suggesting much, if any, gain received from such talent, either in the boy's own feeling about himself or in others' opinions of him.

4. The results have been interpreted in terms of role expectations of children depending on their sex and mental ability, and the function which one or another type of creative talent may play in supporting such expectations.

Teacher classroom behavior and child learning outcomes

1. For this small sample of teachers (N=7), it was found that children who get high scores on creativity tests tend to have teachers who reward by the technique of personal interest and praise for personality attributes of the child, and who avoid rewarding by evaluation. The teaching tends to be individual, and with much listening to the child by the teacher. These teaching techniques may stimulate motivation toward creativity in the children, as represented here by tests of originality, fluency and flexibility. These statements hold for children of superior mental ability; there were very few sizable correlations between teacher behavior and creativity in children of average mental ability in the present data.

2. Children who show considerable liking for other children in the class tend to have teachers who follow much the same procedures. Additionally, the teachers use much reward, directed to individuals rather than to the group. When they punish, however, it is not an individual matter, but rather is directed toward the group. They frequently teach by giving possibilities and expanding ideas and not so much by giving statements of fact. This may well provide more leeway for class interchange and less lecture method. Children may show more liking for others under these teaching techniques because the class atmosphere allows for social interchange without the tension engendered by personal evaluation and personal punishment.

3. Taking the target of children's task-oriented classroom behavior, there are a number of substantial relations with teacher behavior. Children who work steadily a large proportion of class time have teachers whose behavior is almost exactly opposite to that associated with creativity and liking for others. If children's task-oriented work is high, teachers' rewards tend to be given in evaluative terms, to the group rather than to the individual, without show of personal interest in individual personalities. Teachers tend to teach by statement, and giving information. They also frequently remain out of communication with the class.

4. These findings are interesting in consideration of the teacher as a motivating agent. The first two descriptions (for creativity and liking for others) suggest techniques displaying interest in the individual child and his ideas. The children exposed to these teaching techniques, show creativity and liking for other children. Task-oriented work -- the quiet, industrious classroom honored for centuries as a sign of teaching efficiency,

is associated with group methods and frequent evaluation by the teacher. Motivation is perhaps directed toward conventional work rather than toward new ideas or child-child interactions.

5. Achievement test scores were predicted by various teacher behaviors in the superior boys: rewarding by emphasis, punishing by reasoning, punishing by asking explanation, total noncommunicative, teaching by listening, and by offering possibilities, alternatives, and amplifying. Superior girls who achieve well were found to have teachers who reward by personal interest and for innate attributes; also their teachers do much listening.

In this sample, teacher behavior correlates of achievement test scores did not appear for the boys and girls of average mental ability. It is suggested that the sparkling, achievement-oriented bright child, particularly the boy, may provide the feedback to the teacher which he uses to guide his teaching of the total class.

6. Two other learning outcomes measured here on the children, self-concept and attitudes toward school activities, proved independent, for the most part, of the teacher behavior categories. Clinical data provides considerable evidence that teachers do influence both self-concept and attitudes, but possibly, effective teaching techniques are for these aspects of the child more idiosyncratic than for those child measures mentioned above. If this were true, correlations based on group data from a small sample would be insignificant, and this was the present finding. In the present data, there are repetitive suggestions that teachers' perceptions of average children, and teachers' attitudes toward drill, structure, and competition in the classroom activities are related to self-concept in the children of

average (below the class mean) mental ability. Self reported self-concepts of children who have reason to be personally threatened by an "accurate" (objectively based) self report are probably influenced by anxiety, and by healthy defense mechanisms against such anxiety. Our impression is that most sensitive teachers respond to such defenses in a supportive manner. Here is where defense mechanisms serve their best purposes as necessary protection to self-esteem. Such affectional support by teachers might not be necessary if the culture of community and school were oriented to a broader range of talents than the convergent academic set of values which appears to be dominant in the present data. The division of groups on mental ability made in this analysis represents an important potential predictor of usefulness to society, but it is by no means the only or even necessarily the most important one predictor for years to come. Much remains to be learned about diverse talents of children which can be developed to society's benefit in the future.

7. These results are based on a limited sample of teachers and cannot be taken as broadly generalizable. The findings are sufficiently provocative that replication on other samples will be important.

Correlates of teacher attitudes

Teachers' attitudes toward school activities were assessed by the same attitude scale and factor scoring device that was used for the children's attitudes. Correlations were then run between each teacher's score on the 10 factors and the score obtained by each child on the child target variables.

The results indicate that teachers' high scores on Boys' Factors II (prefers structure) and III (anxiety about competition) are associated with high self-concepts for the average boys. This corroborates the finding reported earlier of a positive relation between the average boys' own attitudes on Factor III and self-concept. Evidently teachers who are sympathetic to anxiety about competition create a classroom atmosphere favorable to the development of self-esteem in the less bright boys.

Another interesting finding was the frequent appearance, in the girls' groups, of creativity scores as positive correlates of teacher attitudes. Apparently the extent to which girls can express creativity of thinking is related to how the teacher feels about various school activities. For example, superior girls obtain higher scores on creativity tests in classrooms where teachers are positive in their attitudes toward active participation of non-intellectual sort. Average girls, on the other hand, do better on creativity tests in association with teachers who are sympathetic toward preferences for group membership and some anonymity on the part of the girls.

CONCLUSIONS AND IMPLICATIONS

1. The success of the project in accomplishing its first objective, the development of instruments for measurement of significant outcomes of elementary education, can be evaluated as follows:

1.1 All instruments showed adequate reliability. Information on validity for each instrument was extended by the predictions made and tested as to the correlates of each. The most interesting of these tests open up new fields for empirical replication and theory building. For example, considerable relationship was found between the experimental creativity tests and self-concepts. This may mean that children who can score well on creativity tests find these talents of real utility in promoting self-esteem. Or, it may mean that children already high in self-esteem are sufficiently freed from inhibiting effects of anxiety that the creative potential can be expressed freely. A new study to test replication is now underway; if this proves out, the next step is to experiment with controlled variation of either or both variables.

1.2 Other new instruments worked out fairly well. The technique for measuring children's classroom behavior is a simple category system which accurately reflects the more surface aspects of children's work behavior. The startling finding that for a large proportion of our subjects there is no relationship between reliably measured proportion of the school day spent in task-oriented work and achievement measured by test has practical implications; it suggests strongly that teacher training which leads teachers to have a quiet, well-ordered classroom is a poor way to insure the learning of fundamentals by most children.

1.3 The attitude towards school activities scale provided a number of coherent factors which are quite consistent with their correlates in the children's behavior and production. If these results are replicated, the scale could be used with some confidence with predictive power as an assessment or evaluation device. It is an instrument easily administered to children in later elementary grades; it also provided useful data from teachers' scores.

1.4 Creativity tests have been little used in study of learning outcomes in children. The results reported here are sufficiently provocative so that much more investigation should be made in this area.

2. For the second objective, techniques for measurement of classroom conditions were developed and these proved useful as predictors of learning outcomes. The high fall-spring stability of both teachers' and classmates' judgments of the subjects is a possibly disturbing finding, suggesting little allowance for change in the judges' perceptions of the children over the school year. Furthermore, there is strong agreement between teacher and peer judgments, and also prominent halo effects which suggest a high degree of generalization on the part of the judges. Measurement of teacher interactive behavior with children was shown to be feasible, and provided provocative results which are being followed up.

3. The third objective was the determination of the degree of intercorrelation among the six child target variables, and among the various assessments of the classroom conditions presumed to modify the children's learnings.

If high scores on the six target variables studied should be taken as "desirable" outcomes of children's development during the school year (which is arguable), then small support is given by these results to the doctrine of correlation of desirable characteristics. Three of the four sex-ability groups produced no more than one or two significant correlations each, out of the 15 possible, when the six target variables were intercorrelated. In the superior boys group there were more: 5 out of 15 significant. The data for this group alone suggest that "desirable" qualities do tend to hang together, whereas for the other groups independence of the six targets is more generally the case. We have suggested that social and personally dynamic factors are operating to produce this independence among "desirable" characteristics.

The targets were chosen to assess widely differing abilities, behaviors, and attitudes, and were measured in sufficiently divergent ways that the possibility of response set generally was minimized. The absence of correlation among the targets, then, contrasts with the highly significant positive intercorrelations found in the case of the teacher and peer perceptions of the child subjects. Here we get strong halo effects.

4. Prediction of the six learning outcomes has been shown to vary, depending on the *sex* and *ability* level of the child, and this finding has generally been interpreted to document the effect of 1) mental ability as a *basic given* in the way several types of classroom learning take place (in this sample), and 2) cultural expectancies and roles assigned the two *sexes*.

5. The strong interpersonal influence of the *opinions* of teachers and peers on the learning of the *less able* children gives food for thought. These children are the ones who are least likely to find inherent satisfactions in their schooling, and the ones who will provide a large proportion of the dropout group in high school. If it is true, as these results indicate, that their own self-esteem is associated significantly with the warmth with which they are regarded by the teacher and classmates, then opportunities for maximizing these personal relations should be provided. The self-contained classroom, though not necessarily with ability grouping, seems more likely to accomplish this than departmentalization or team teaching which generally involve larger groups and less personal teacher-child interactions.

6. The results of considering prediction of *six*, rather than a *single*, learning outcome of elementary education has meant that the data

are complex. On the other hand, society wants more than single outcomes from the early education of its children, and research which is useful for planning of changing patterns in the elementary schools needs to study multiple as well as single objectives. The present research was designed to make a sound start on the long term task.*

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*Some of the results reported here already appear as established facts in the literature of child development. In the detailed final report referred to at the beginning of this summary statement, earlier theories and empirical results on these problems are incorporated into the body of new information provided by this research. There are 85 references listed in the final report.

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APPENDIX A

Instruments

Appendix A-1

INSTRUCTIONS FOR SELF-CONCEPT INVENTORY

Fall administration: At the beginning of a new school year, many people like to think about their work and how it is going. In order to do this well, you have to look at yourself and decide what your strong points are and what your weak points are. The points listed below are taken from the papers some El Roble children wrote on "The Kind of Person I Am and The Kind of Person I Want to Become. These were the points that this class felt were important, in scholastic achievement and in getting along with others. There are three different columns to check for each of the items: (Go to Column 1).

Winter administration: At certain times in the year, many people like to think about their work and how it is going. You remember you did this early in the year and now you have a chance to again look at yourself and decide what your strong points are and what your weak points are.

Spring administration: At the close of the school year we look back to evaluate the progress we have made. Growth as people is as important as scholastic achievement. To help you to gain insight into yourselves and to plan for the future as well as to help me evaluate my year with you, please fill out the following inventory. There are three different columns to check for each of the items:

Column 1 -- Am I pretty well satisfied with myself in this area? Everybody has areas in which he does feel pretty well satisfied, and other areas in which he is not satisfied with himself. Yes means you feel pretty well satisfied, no means you are not very satisfied.

Column 2 -- How much improvement do I think I will make in this by the end of school? (Spring: do I think I have made in this during the year? etc.) In some things we can pretty well judge that we probably can make some improvement, but in other things it looks as if there probably will not be any change. Check whether you think you will make some improvement, or whether you think you probably won't. *

Column 3 -- In this column you can show how you think you stand in each thing, compared to other members of your class. Which are the areas in which you are very good, in which you are better than a good many of the class, in which you are better than average, in which you are just fair, and in which you are not very good?

Check once in every column.

* The column heading for improvement on the next pages was varied depending on whether it was Fall or Spring.

Name____________________ Date____________________	Am I pretty well satisfied with myself in this? (Check yes or no)		Do I think I may make some improvement before the end of the year? (Check one)		Compared with others in my class, how do I rate now? (Check one)					
	Yes	No	I think I may make some improvement	I probably won't make any change	Very good	Better than a good many	Better than average	Fair	Not very good	
1. Playing outdoor games after school										
2. Learning things rapidly										
3. Getting along well with boys										
4. Getting along well with girls										
5. Being attractive, good-looking										
6. Getting along well with teachers										
7. Getting my school work in on time, and not getting behind										
8. Being sensitive to what other people are feeling										
9. Being comical or humorous										
10. Doing science projects										
11. Being good at sports										
12. Remembering what I've learned										
13. Controlling my temper with boys										
14. Controlling my temper with girls										
15. Being a good size and build for my age										
16. Controlling my temper with teachers										
17. Getting assignments straight the first time										
18. Being willing to help others										
19. Being confident, not shy or timid										
20. Doing art work										

Name________________ Date________________	Am I pretty well satisfied with myself in this? (Check yes or no)		Do I think I may make some improvement before the end of the year? (Check one)		Compared with others in my class, how do I rate now? (Check one)					
	Yes	No	I think I may make some improvement	I probably won't make any change	Very good	Better than a good many	Better than average	Fair	Not very good	
21. Being good at things that require physical skill										
22. Being a good student										
23. Making friends easily, with boys										
24. Making friends easily, with girls										
25. Being neat and clean in appearance										
26. Being able to take orders from teachers without resenting it										
27. Being able to concentrate										
28. Being courteous, having good manners										
29. Getting a lot of fun out of life										
30. Doing arithmetic work										
31. Being built for sports										
32. Being smart										
33. Being a leader--the one to get things started, with boys										
34. Being a leader--the one to get things started, with girls										
35. Being not too skinny, not too fat										
36. Paying attention to teachers, not closing my ears to them										
37. Studying hard, not wasting time										
38. Being willing for others to have their way sometimes										
39. Not expecting everything I do to be perfect										
40. Getting good grades in school										

Name________________ Date________________	Am I pretty well satisfied with myself in this? (Check yes or no)		Do I think I may make some improvement before the end of the year? (Check one)		Compared with others in my class, how do I rate now? (Check one)					
	Yes	No	I think I may make some improvement	I probably won't make any change	Very good	Better than a good many	Better than average	Fair	Not very good	
41. Being good at physical education										
42. Having new, original ideas										
43. Having plenty of friends, among the boys										
44. Having plenty of friends, among the girls										
45. Being not too tall, not too short										
46. Being able to talk to teachers easily										
47. Going ahead with school work on my own										
48. Making other people feel at ease										
49. Having lots of pep and energy										
50. Doing social studies projects										
51. Being a good athlete										
52. Being able to apply what I've learned										
53. Being active in social affairs, with the boys										
54. Being active in social affairs, with the girls										
55. Having nice skin										
56. Feeling comfortable with teachers										
57. Spending most of my time on my work, not goofing off										
58. Getting others in class to like me										
59. Enjoying myself in school										
60. Reading on my own for a research project										

Name________________ Date________________	Am I pretty well satisfied with myself in this? (Check yes or no)		Do I think I may make some improvement before the end of the year? (Check one)		Compared with others in my class, how do I rate now? (Check one)					
	Yes	No	I think I may make some improvement	I probably won't make any change	Very good	Better than a good many	Better than average	Fair	Not very good	
61. Being good at playground activities										
62. Having brains										
63. Being popular, with boys										
64. Being popular, with girls										
65. Having nice features (nose, eyes, etc.)										
66. Feeling that teachers have confidence in me										
67. Well organized, having materials ready when they're needed										
68. Liking others in class										
69. Being able to change things when they don't suit me										
70. Doing library reading at home										
71. Doing outdoor activities hiking, riding, or swimming										
72. Interested in new things, excited about all there is to learn										
73. Having fun with boys in the class										
74. Having fun with girls in the class										
75. Having nice clothes, right for my age										
76. Having fun at school with teachers										
77. Sticking to things, not giving up easily										
78. Being easy to get along with										
79. Getting along without worrying too much										
80. Doing spelling work										

Name________________ Date________________	Am I pretty well satisfied with myself in this? (Check yes or no)		Do I think I may make some improvement before the end of the year? (Check one)		Compared with others in my class, how do I rate now? (Check one)					
	Yes	No	I think I may make some improvement	I probably won't make any change	Very good	Better than a good many	Better than average	Fair	Not very good	
81. Having athletic skills										
82. Being challenged by hard things										
83. Being cooperative, with boys										
84. Being cooperative, with girls										
85. Having nice hair										
86. Being cooperative, with teachers										
87. Not making excuses for work which I haven't completed										
88. Being fair										
89. Liking to live as I please										
90. Taking part in class discussions										
91. Enjoying games and sports										
92. Having the brains for college										
93. Understanding boys' feelings										
94. Understanding girls' feelings										
95. Having nice teeth										
96. Understanding teachers' feelings										
97. Budgeting time spent with TV, outside activities and study										
98. Understanding other people										
99. Being able to live my own life										
100. Doing creative writing activities										

Appendix A-2

NAME ______________________ DATE ____________________________

We don't like all of our friends in the same way. Some we like more than others. There may be some people we don't like at all. It is a help to your teacher in planning work groups to understand your feelings. Beside each name listed, put a check in the space under the statement which most nearly describes your feelings about the person. When you come to your own name, check the space which describes how you think most of the boys and girls feel about you. Substitute "her" for "him" when checking a girl's name. This paper will be kept in confidence.

	Would like to have him as one of my best friends.	Would like to have him in my group but not as a close friend.	Would like to be with him once in a while but not often nor for a long time.	I would rather not have anything to do with him.	Dislike him.
Morton					
Terry					
Carol					
Jane					
Tom					
Mike					
Henry					
Pat					
Jeanne					
Karen					
Scott					
Margaret					
Dennis					
Jeff					
Laurie					
Janet					
Gary					
David					
Paul					
Robin					
Stephen					
Bill					
Gary					
Virginia					
Chris					
Debra					
Pam					

Appendix A-3

Classroom Behavior Definitions

IW	Intent on ongoing work or discussion, task-oriented, is doing what he is supposed to be doing. Includes actively working on task and also collecting, getting out, organizing or putting away materials necessary for work. Includes thoughtful staring when the child seems to be involved in the work task. Key phrase is oriented to task.
SW	Any social remark, interchange, or action which is work-oriented. Reserve this category for the expression of social needs in relation to work tasks. Child may initiate social contacts in relation to his own work or respond to another child's work. Children explaining task to each other, noting each other's progress, showing own progress on task, giving or getting suggestions in regard to work, actually cooperating and sharing a task socially. In discussion any direct verbal contribution is scored SW -- and also any evidence of an attempt to contribute such as raising his hand. Also asking the teacher a question about his work.
SF	Any social remark, interchange or action. SF if friendly.
W	Wanders, looks around, or watches others without much purpose. Apparently wants to see what is going on in class. May be only momentary. A lapse of attention to task -- checking the action of class. May be accompanied by aimless fiddling or doodling.
D	Daydreaming, withdrawn from class activity, solitary, staring in space not apprently thinking about work and not social. Generally eyes do not seem focussed on anything. May be accompanied by aimless fiddling or doodling activity when it seems a sort of mechanical, simultaneous accompaniment of daydreaming.
IO_A	Intent and actively engaged in business of his own, not the ongoing activity of the class. Reads a recreational book, does a school task he is not supposed to be doing at that time. Doing anything that may at some time have an academic connotation, but is inappropriate at present in view of the ongoing task.
IO_N	When child is involved in doing something of a non-academic nature that is not related to the ongoing work of the class. Examples, cleaning out desk, concentrating on an involved doodling activity, folding paper to make an airplane, laying out bits of paper or clay in a definite pattern -- when this play or doodling activity has assumed and carries its own interest so that the child is intent upon it.

Appendix A-4

NAME________________________ DATE________________________

ATTITUDE TOWARD SUBJECT AREAS AND CLASSROOM ACTIVITIES

Check (✓) the number from 1 to 5 which most nearly indicates how you feel about the following school subjects and activities. After checking a number you may wish to write at the side to further explain your choice. If your class does not have any of the following subjects or activities please leave a blank space. Be sure that numbers 1 and 5 are used.

	1	2	3	4	5	
	Like very much	Like sometimes	OK but not wild about	Dislike sometimes	Dislike very much	Comments
Arithmetic drill on fundamentals (mechanics, such as +, ÷, -, x)						
Solving problems in arithmetic						
Foreign language						
Playing games, singing in foreign language						
Health facts						
Personal and world health problems						
Spelling workbook						
Spelling words in everyday writing						
Handwriting - formal drill						
Being careful of handwriting in everyday writing						
Developing reading skills						
Grammar and form of written language, punctuation						
Written language - letters						
Written language - reports						
Composition						
Creative Poetry (making up poetry)						
Creative stories (making up stories)						
Creative dance (making up dances)						
Learning specific art techniques						
Creative art and construction - using own ideas						
Music - Instrumental						
Dramatization						
Science construction for demonstration						
Social studies construction						
Science experiments or demonstrations						
Science research reading						
Social studies research reading						

	1	2	3	4	5		
	Like very much	Like some-times	Ok but not wild about	Dis-like some-times	Dis-like very much	Comments	
Going more deeply into work related to schoolwork							
Organizing and writing reports							
Having long periods in which to do work more thoroughly							
Having homework							
Having another student help you with your work							
Helping other children with their work							
Having teacher give you private help							
Helping teacher with his work							
Taking tests - regular, quiz, reviews							
Taking tests - achievement							
Giving reports							
Being a chairman							
Being a class officer							
Speaking in discussion to small group							
Speaking in discussion to large group							
Being given responsibilities and special jobs (officer, monitor, student council, etc.)							
Listening to discussion							
Music listening							
Listening to teacher explain things							
Listening to classmates explain things							
Listening to guest speaker							
Watching movies and film strips							
Listening to tape recordings							
Being in plays							
Being in programs							
Playing games							

	1 Like very much	2 Like some-times	3 OK but not wild about	4 Dis-like some-times	5 Dis-like very much	Comments	
Discussing how individual work went in class discussion (evaluating)							
Discussing how class work went in class discussion (evaluating)							
Working in small committees							
Working in large committees							
Having class meeting							
Teacher assigning seats							
Choosing where you sit							
Picking out of hat to see where you sit							
Teacher keeping strict control and quiet							
Letting people talk and move around as much as they like							
Teacher decides length of periods							
Group decides length of periods							
Having quiet study periods							
Group planning the daily program							
Participating in teacher led discussion							
Participating in student led discussion							
Participating in discussion, without a leader (neither teacher nor student in charge)							
Major sports							
Field trip							
Singing							
Recreational reading							
Following hobbies							
Working alone							
Folk dancing							
Individual study based on your own interest							
Free play							

Appendix A-5

NAME ________________ SCHOOL AND GRADE ________________
DATE ________________ TEACHER ________________

PLOT TITLES

In this test you will be given four stories and you are to write as many clever titles as you can for each. Cleverness may be expressed in either or both of two ways.

(1) The titles may be novel; that is, they may be new combinations of words, or familiar combinations of words applied in a novel way.

(2) The titles may be interest-arousing; that is, they may be "catchy" or "inviting", as one might find in some book titles.

In addition to cleverness, it is necessary that the titles be related to the story. That is, they must not be so vague they could be titles for many stories.

There will be numbered lines to write on. Use one line for each title. When the signal is given (not yet), turn the page and write as many clever titles as you can for the plot at the top of the page.

The test contains four plots. Each plot will be separately timed. You will have 5 minutes for each plot. At the end of 3 minutes your teacher will tell you to change pencils, then continue on for 2 minutes until your teacher tells you to stop.

Are there any questions?

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

This test was prepared under U. S. Government Contract N6onr-23810.

WRITE AS MANY APPROPRIATE TITLES
AS YOU CAN FOR THE FOLLOWING PLOT

A young missionary is caught by a tribe of wild savages in dark Africa. He is put in a large pot and is about to be boiled when a beautiful young girl, a princess of the tribe, offers to save him by becoming his mate. The missionary refuses and is boiled to death.

1.____

2.____

3.____

4.____

5.____

6.____

7.____

8.____

9.____

10.____

11.____

12.____

13.____

14.____

15.____

16.____

17.____

18.____

19.____

20.____

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

WRITE AS MANY APPROPRIATE TITLES
AS YOU CAN FOR THE FOLLOWING PLOT

A gambler bet a group of doctors he could cure a hospital ward full of very sick people. First, he quietly informed each patient that he would determine which of them was the sickest in order to make a powder out of his body to cure the rest. Then, when the gambler loudly asked which of the patients were well enough to leave their beds, the entire ward quickly got up and left, thereby winning him the bet.

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________
13. ____________________
14. ____________________
15. ____________________
16. ____________________
17. ____________________
18. ____________________
19. ____________________
20. ____________________

WRITE AS MANY APPROPRIATE TITLES
AS YOU CAN FOR THE FOLLOWING PLOT

A wise man warned his townspeople that the grain they made bread from was diseased and would make them insane. The people ate the bread anyway, and they all went mad. The wise man, now the only normal person in town, was shunned by the others as odd. He then ate the bread in order to be like everyone else.

1.____

2.____

3.____

4.____

5.____

6.____

7.____

8.____

9.____

10.____

11.____

12.____

13.____

14.____

15.____

16.____

17.____

18.____

19.____

20.____

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

WRITE AS MANY APPROPRIATE TITLES
AS YOU CAN FOR THE FOLLOWING PLOT

A man had a wife who was not able to speak. He found a doctor who was able to restore her power of speech. Then the man's peace of mind was broken by his wife's constant talking. He had the doctor perform an operation on him so that although she talked endlessly he can't hear a thing she says.

1.____

2.____

3.____

4.____

5.____

6.____

7.____

8.____

9.____

10.____

11.____

12.____

13.____

14.____

15.____

16.____

17.____

18.____

19.____

20.____

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

NAME ________ SCHOOL AND GRADE ________
DATE ________ TEACHER ________

THING CATEGORIES

In this test you are to list as many things as you can that could be put in a given category.

Below are two examples of things that are blue or that could be blue. Look at these examples, then go ahead and write in the blanks more things that are blue or that could be blue.

sky
ocean
____
____
____
____
____
____

When the signal is given (not yet), turn the page. You will be given another category. Write as many things as you can that you could put in this new category. Write the words as rapidly as you can. You will be allowed 4 minutes. After 3 minutes your teacher will tell you to change pencils. Then continue for 1 minute until your teacher tells you to stop.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

THING CATEGORIES

The new category is "round".

Go ahead and write all the things that are round or that could be round.

DO NOT GO TO THE NEXT PAGE UNTIL TOLD TO DO SO.

THING CATEGORIES

The new category is "soft".

Go ahead and write all the things that are soft or that could be soft.

DO NOT GO ON TO THE NEXT PAGE UNTIL TOLD TO DO SO.

THINGS CATEGORIES

The new category is "sharp".

Go ahead and write all the things that are sharp or that could be **sharp**.

DO NOT GO ON TO NEXT PAGE UNTIL TOLD TO DO SO.

THING CATEGORIES

The new category is "green".

Go ahead and write all the things that are green or that could be green.

NAME ______________________ SCHOOL AND GRADE ______________________
DATE ______________________ TEACHER ______________________

OBJECT SYNTHESIS

In each of the following items you will be given two objects. Your task is to think of something you could make by combining the two objects. For example:

Given: Nail and a cane ____________ ? ____________

You could make a paper picker or a spear as the result of one way of combining the objects. You could make a hook, if the objects were combined in another way.

Given Volley ball steel spring punching bag

One answer that might serve has been written in the answer space above.

The objects given should be sufficient in themselves to make the new object. You should not use objects other than those stated. Be sure to use both of the original objects in making the new object.

The test is divided into two parts of 12 items each. You will be allowed 7 minutes for each part. At the end of 5 minutes your teacher will tell you to change pencils. Then continue for 2 more minutes until your teacher tells you to stop. Only one answer is required for each item. Work rapidly. If you have trouble with any item, go on to the next one. You may come back to those not answered if time permits, but do not return to Part I after starting Part II.

Are there any questions?

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

This test was prepared under U. S. Government Contract N6onr-23810.

PART I

1.	sheet of paper	glue	____________________
2.	push broom	coat	____________________
3.	clamshells	shoelace	____________________
4.	paper clip	playing card	____________________
5.	wire coathanger	newspaper	____________________
6.	rubber band	oak leaf	____________________
7.	manhole cover	chain	____________________
8.	wire	powderpuff	____________________
9.	needle	clothes pin	____________________
10.	wire coathanger	rock	____________________
11.	brick	dish towel	____________________
12.	rubber sponge	screw	____________________

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

PART II

13. screwdriver	rag	
14. pliers	shoestring	
15. cellophane	candle	
16. hairpin	button	
17. golf club	necktie	
18. safety pin	string	
19. inner tube	barrel	
20. key chain	stick	
21. cork	spring	
22. cotton	scissors	
23. window pane	tin foil	
24. thread spool	nail	

Appendix A-6

"WHO ARE THEY?" or "GUESS WHO THIS IS."

Name . . . . School . . . .

Grade . . . . Boy or Girl . . . .Date . . . . . . Age . .

Directions

On the following pages are some word pictures of members of your class. Read each statement and write down the names of the persons whom you think the descriptions fit.

Remember:

One description may fit several persons. You can name both boys and girls.

Put down first the person (boy or girl) who fits the best, then the one who is second best for that description.

The same person may be mentioned for more than one description.

Write "myself" if you think the description fits you.

You will have as much time as you need to finish. Do not hurry.

Your answers will be kept in confidence.

Now you are ready to begin.

NAME____________________ DATE________________

1. Here are some people who enjoy talking, always have something to say. ________________ ________________

2. Here are some people who don't enjoy talking, and are very quiet, even when nearly everyone else is talking. ________________ ________________

3. Here are some people who always know how to start games or suggest something interesting to do so that others like to join in. ________________ ________________

4. Here are some people who wait for somebody else to think of something to do and always like to follow the suggestions which others make. ________________ ________________

5. These people are very fond of a good joke, are the first to laugh and always see the point. ________________ ________________

6. Here are some people who don't care much for jokes. ________________ ________________

7. Here are some people who are outstanding at outdoor activities which require physical ability. ________________ ________________

8. These people are not so good at outdoor activities. They may be good at other things, but not outdoor activities. ________________ ________________

9. Here are some people who are very smart, have lots of brains. ________________ ________________

10. These are some people who don't seem so smart. ________________ ________________ ________________

NAME____________________ DATE____________________

11. These are some people who get along very well with teachers.

12. Here are some who don't get along so well with teachers.

13. These are some people who are very attractive and good-looking,

14. Here are some who are not so good-looking.

15. These are some people who almost always get their school work done on time.

16. Here are some who usually don't get their school work done on time.

17. These are some people who are easy to get along with, are understanding of others' feelings, and helpful.

18. Here are some who are not very easy to get along with, and don't seem to understand how other people feel.

19. These are some people who seem to enjoy living, who seem happy most of the time.

20. Here are some who seem not to enjoy things very much. They seem unhappy a good deal of the time.

NAME______________________ DATE______________________

21. These are some people who are very good at their school work.

____

____

22. Here are some who are not so good at their school work,

____

____

23. These are some people who get along very well with boys. They have fun with boys.

____

____

24, Here are some who do not have so much fun with boys.

____

____

25. These are some people who get along very well with girls. They have fun with girls.

____

____

26. Here are some who do not have so much fun with girls.

____

____

Appendix A-7

RATINGS BY TEACHER

The teacher should divide his class into 4 goups, High, Medium-high, Medium-low, and Low on each trait. Place the names on the "Distribution of Scores" sheet. Do not leave out any children.

1. Attractive appearance

The child who is high in this need not necessarily be the best looking child in the class. He will however be a pleasant, attractive child. His face will have a pleasant expression, his hair will be combed neatly and will be an appropriate hair style for him. His skin and teeth will be in good condition and his voice will be pleasant to listen to. He will be of good size and build for his age and his clothes will be appropriate for his age and his physical build.

2. Physical ability, boys

This person gives the appearance of being "built for" physical activities. He is strong and has a high energy level. He is agile and quick and has a great deal of stamina. He has both large and small muscle coordination and his accuracy in movements indicates good eye-hand coordination. His movements are graceful, not awkward.

3. Physical ability, girls

This person gives the appearance of being "built for" physical activities. She is strong and has a high energy level. She is agile and quick and has a great deal of stamina. She has both large and small muscle coordination and her accuracy in movements indicates good eye-hand coordination. Her movements are graceful, not awkward.

4. Work habits

The child may or may not have superior ability. He may be genuinely interested in the work or he may be working hard merely to win the approval of the teacher and his peers. This child will spend most of his time working and not "goofing," he will get his schoolwork in on time, will not make excuses for work which he did not complete. The child will seem well organized, his materials will be available when he needs them and he will seem to budget his time wisely. He will also stick to his work, not give up easily and he will be able to concentrate and not be distracted. The criterion here is not the neatness or attractiveness of the work but the way the child works.

5. Social virtues

This child is high in the social skills, traits that make getting along with others a smooth and comfortable process. He observes the rules of social conduct in the broadest sense. He is sensitive to other's feelings, helpful, courteous, cooperative, and is kind to others and tries to make them feel at ease. His relationships with others are usually comfortable and harmonious.

6. Happy qualities

The child who is high in this usually seems happy and comfortable in most situations. He seems to enjoy the many different events of the day, both social and academic. He usually has a cheerful expression on his face but his happiness need not take the form of the "class clown," or the "life of the party." This child instead is happy with himself. He will usually have a pleased, satisfied look on his face when he completes his work. A low mark on a quiz will not cause uncalled for anxiety and his confidence in himself will not be destroyed. He will generally not worry too much, but instead enjoys what he is doing and seems to get a great deal of fun out of life.

7. Anxiety over achievement

The child who is high in this will appear worried and concerned about his schoolwork. He will seem quite upset if his work is not as good as he'd like it to be, and he often makes comparisons between his work and other's. Taking tests often upsets him, and he often appears anxious when his paper is returned and he is about to see his mark. Often this child will seek peer or teacher approval, and he seems somewhat hesitant and fearful when new tasks are presented to him. This child may or may not be of superior ability but in either case he will be upset if his work is not always as good as he thinks it should be.

8. Creativity

This child may or may not verbally communicate his ideas to others. His originality may be in a non-verbal area such as construction or art or in more verbal areas but in either case he will be able to put things together in a new way or see things in a way others have not seen before. His ideas and work are not copied, they are fresh, and new. It is rare for evidences of creativity to be present at all times but the child high in this will show occasional flashes of an ability to express himself in an original way. His is an inventive, imaginative mind capable of independent thought.

9. Mental ability

The people who are high in this learn things rapidly, have new and original ideas, can apply what they've learned, are interested in new things and are excited about learning new things.

10. Motive of SEEKING STATUS THROUGH ACADEMIC MEANS

The child who is high in this seeks to win recognition and approval from teacher and group through his accomplishment at school activities. He seeks to be admired and respected through his ideas, contributions, and other work connected with the school program.

He is likely to show awareness of the work others are doing, of how far along they are, of how many right they have. May look at other children's papers, may make comments on them.

He will show pleasure if his work or contributions are up to or better than those of others. He may set his own standards of comparison -- for example, he may not compare himself to the class "brain."

Likes activities in which he can compare himself with others. Likes public recognition; likes to show his work, when it is good. Smiles when complimented. Sour face or anxiety when he sees his work is not so good as others.

Asks to do activities in which he knows he can shine. Groans at activities in which he is not so good. Volunteers when there is an audience situation. Waves his hand with his whole body, pleads. Disappointed if not called on. May be so anxious to speak that he doesn't spend time to think. If he is shown to be wrong in an audience situation, he is frustrated, may take it with poor grace.

Is eager to move on to new levels of work, and may talk about the higher level. "What book are you in?" Says he is glad to be doing harder work. May complain if given easier work. Likes to see his own progress.

This child may have good ability or he may not. If he does not, it is difficult for a teacher to provide him with satisfaction in his work, even though he may be working up to his own capacity.

- - - - - - -

The child who is medium-high in this motive will show the above behavior but in a more tempered way. He still likes to show his work and his ideas but not to the degree of the high child. He is fairly competitive but is a little more content with his own performance.

The child who is medium-low in this motive does not show much desire to win recognition through academic means. He does not like to speak up in class and present his ideas as much and although he occasionally may show some desire to "get ahead" academically, this does not seem to be a dominant motive with him.

The child who is low in this motive rarely or never seems to seek recognition through academic means. It may be that he believes he will not get approval, or that he genuinely does not care for recognition. He may do little work or he may work quite hard but he does not seem concerned about outside approval.

11. Motive of SEEKING STATUS THROUGH GROUP RECOGNITION

The child who is *high* in this seeks to win recognition and approval from teacher and group through social means rather than academic means. He has a strong desire to be admired and respected as a result of popularity and social importance.

He wants his opinions to be valued by the group. Wants to be recognized as an authority, or a "wheel". He seeks to influence the group to his way of thinking. He is pleased if they agree with him and frustrated if they do not.

He usually enjoys being in positions of leadership or responsibility -- class offices, team captain and he may perform very effectively and conscientiously in these positions. He may show some tension if he is not chosen. Some children who are *high* on this motive do not like being in the responsible position, however, but show their desire for group recognition by trying to sway the group to their ideas. At times they may heckle the class officer or other leader, or show jealousy.

Sometimes the *high* child is so carried away by trying to promote his ideas that he loses the group and defeats his own ends.

The child who is *high* on this motive may or may not be skillful at leadership. He may be popular or unpopular. What counts is his desire to be influential. If he is unpopular he probably wishes to become more popular, although he may seek his recognition through a small group or clique which is kept exclusive. If he is popular, and successful in peer and/or teacher relationships, he will use this success as a means of gaining further recognition and approval.

He may also seek recognition through clowning, attention-getting, horseplay, or group fun. He may seek recognition through possessions, family or friends.

- - - -

The child who is *medium-high* in this motive will show the above behavior, but in a more tempered way. At times he will be willing to take a back seat as far as his opinions and his influence go. He enjoys group recognition, but will not go as far out to get it as the *high* child.

The child who is medium-low in this motive does not show much desire for group recognition. Probably he is more of a follower than a leader. He does not advance his opinions very much, seems agreeable to others' opinions much of the time. Occasionally one will show some striving for group recognition, but this does not seem to be a dominant motive with him.

The child who is *low* in this motive rarely or never seems to seek group recognition. This may be because he genuinely does not care for it, or it may be that he is certain in advance that he will not get approval and admiration and so operates more in terms of other motives. He may be more solitary or in a follower role.

12. Motive of GAINING AFFECTION AND FRIENDSHIP FROM PEERS

The need for warm, comfortable interactions with peers -- the goal being to feel cared for, accepted, supported, and secure.

The child who is high in this seeks to be near his friends -- to interact with them, to smile with them, to share private jokes, to share joys and also troubles.

May be unhappy if he is separated from friends. Seems secure when with them, insecure if apart. Child will be particularly unhappy if he thinks he has lost a friend, even temporarily. Doesn't like to be with a new group.

Needs signs of affection -- praise, compliments. May be upset even by mild or unintended criticism, or a friend going off without him, or a friend not choosing him, or not helping him.

May be a follower or a leader, may have much or little ability, may have many friends or one or none, but strives to get and/or keep friends.

- - - -

The child who is medium-high in this motive will want friends and want to interact with them, but he will not show as strong a need to be with them and to get signs of affection. When times come when he should work alone, he is able to do so without distress.

The child who is medium-low in this motive enjoys being with friends at times, but probably more of the time he is more or less "on his own." He rarely shows insecurity when separated from friends, may get along equally well with a new group as with the old friendship group.

The child who is low in this motive is probably pretty much of a lone wolf. He doesn't seem to need or to depend on signs of affection and friendship. He probably appears more independent of people.

13. Motive of GAINING AFFECTION AND FRIENDSHIP FROM TEACHER

The need for warm, comfortable interactions with teacher -- the goal being to be cared for, accepted, supported, and secure.

The child who is high in this frequently seeks to be near or get attention from the teacher -- to interact with him, to share joys and also troubles. May be unhappy if teacher is busy with others, and particularly unhappy if he thinks the teacher doesn't like him, even temporarily. May be quite dependent on the teacher approving every bit of his work.

Needs signs of affection -- praise, compliments. May be upset even by a teacher's mild or unintended criticism.

- - - -

The child who is medium-high in this motive will want some attention and affection from the teacher, but will not show a constant need for this. He is able to do much of his work without the need for teacher's praise and affection.

The child who is medium-low in this motive enjoys being with the teacher at times, but is more or less on his own. He rarely shows insecurity when the teacher cannot help him or does not show him special attention.

The child who is low in this motive doesn't seem to need or depend on affection or attention from the teacher. He probably appears more independent of people.

14. Motive of INTRINSIC INTEREST

The child who is high in this shows that he genuinely likes most of the school activities. There may be some that he only tolerates, or does because they are expected of him, but for the most part he shows real interest and pleasure in the doing of the activity.

He may or may not "show off" his accomplishments to others. He doesn't worry or show anxiety about meeting standards, either his own or somebody else's.

For him school "work" is play or pleasurable. He seems to enjoy doing the school lessons. He chooses to read or carry out a school activity when he might be playing. He does more than is required, but does not seek recognition on this account, for to him the work is its own reward. He may share his pleasure with teacher or with peers, but he is not asking for praise or admiration.

He does not need urging to start and generally does not become distracted during work periods.

He asks pertinent questions. Also shows enjoyment: "It's fun," or "It's interesting," or "I enjoyed that."

He may have good ability, but he may not. If he does not, the level of this work may not be very high, but he appears to enjoy it just the same.

Theoretically, this motive should be rated separately for the different work activities of the school day. A child might be high in intrinsic interest for arithmetic but rather low for intrinsic interest in social studies. But, in order not to make the rating job too time-consuming, we will have to settle for one rating. Rate the child as he is for the most part of the school day.

- - - -

The child who is medium-high in this motive will like most of the school activities, show considerable enjoyment, but not to the extent of the high child. Perhaps he will show a lot of pleasure in certain activities, but not much liking for others. He does not show intrinsic interest over as large a part of the school day.

The child who is medium-low in this motive does not show much intrinsic interest. Occasionally, he will blossom with real enjoyment, but this does not happen very often. Many things he does because they are expected of him, and he will not very often do more than is required. He is liable to get distracted during work periods.

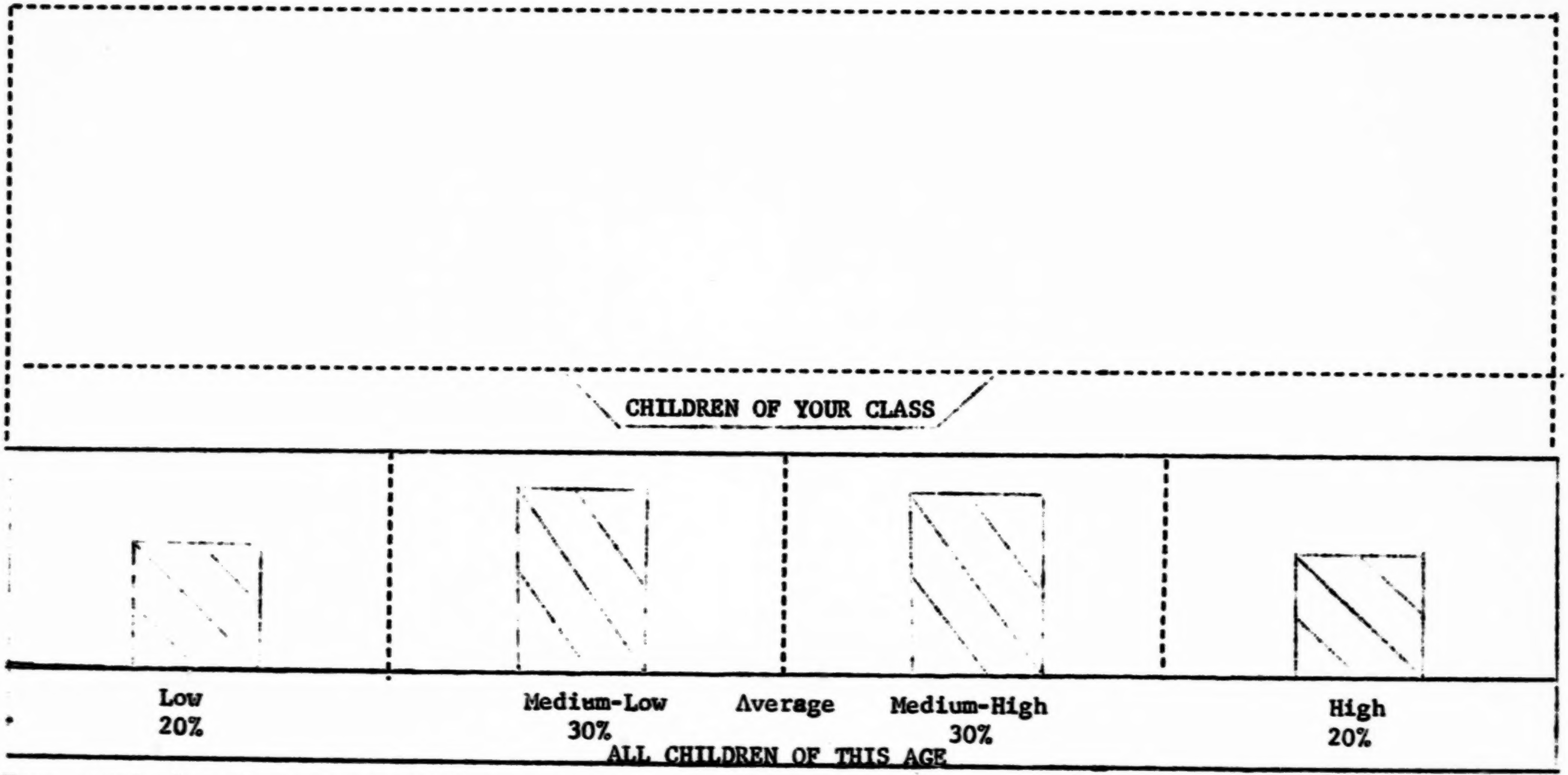
The child who is low in this motive rarely or never shows real pleasure in his work. He may work hard for other reasons, such as gaining recognition but the work itself is not so pleasurable as getting it done and gaining the recognition. Or he may not work hard, may need a lot of reminding in order to accomplish a minimum.

Date__________________

Grade__________________

Teacher____________________

DISTRIBUTION OF SCORES OR RATINGS ON:


CHILDREN OF YOUR CLASS
Low
20%
Medium-Low
30%
Average
Medium-High
30%
High
20%
ALL CHILDREN OF THIS AGE

Your particular class may be different from this; it may be up or down on this scale. Think of your lowest child and your highest child; these will be the ends of your class scale. Put them on your scale, then place the rest of the children also in the 4 groups which are roughly the size of the "all children" scale. For a class of 28, this would be approximately 6 children in the High group, 8 in Medium-High and Medium-Low, 6 in Low. However, your class may have slightly different numbers in these groups.

APPENDIX B

Tables

Table B-1

CHILD VARIABLES: SEX DIFFERENCES IN MEAN SCORES
Differences noted here are significant at the .05 level or better.
(F = Fall, S = Spring, W = Winter)

	Boys higher than girls		Girls higher than boys	
	Superior boys (N=47) higher than Superior girls (N-49)	Average boys (N=48) higher than Average girls (N=51)	Superior girls (N=49) higher than Superior boys (N=47)	Average girls (N=51) higher than Average boys (N=48)
1. Self-concept	physical ability F S	- - -	- - -	- - -
	- - -	- - -	- - -	social relations, opposite sex F
	mental ability S	- - -	- - -	- - -
2. Social relations	- - -	liking for opposite sex S	- - -	- - -
3. Classroom behavior	- - -	- - -	social work S	social work S
	intent on non-academic work S	- - -	- - -	- - -
	- - -	wandering S	- - -	- - -
4. Achievement	arithmetic computation F	- - -	- - -	- - -
	arithmetic concepts F	- - -	- - -	- - -
5. Attitudes	- - -	- - -	- - -	- - -
6. Creativity	- - -	- - -	- - -	plot fluency W
7. Primary mental abilities	space W	space* W	- - -	- - -
	- - -	- - -	- - -	reasoning W
8. Thematic apperception test	- - -	- - -	need affiliation W	need affiliation W
	- - -	- - -	need power W	- - -
9. Teacher rating	- - -	- - -	gain affection, teacher F S	gain affection, teacher F S
	- - -	- - -	work habits F	work habits F
	- - -	seeks status social F	- - -	- - -

Table B-1 (continued)

	Boys higher than Girls		Girls higher than Boys	
	Superior boys higher than Superior girls	Average boys higher than Average girls	Superior girls higher than Superior boys	Average girls higher than Average boys
10. Peer nominations	physical ability F	physical ability F S	- - -	- - -
	- - -	- - -	- - -	mental ability F
	- - -	- - -	social relations - teacher F	social relations - teacher F S
	- - -	- - -	social virtues F	social virtues S
	- - -	- - -	school subjects S	- - -

Table B-2

CHILD VARIABLES: ABILITY DIFFERENCES WITHIN THE SEX GROUPS
Mean Scores

	B O Y S		G I R L S	
	Superior boys (N=47) higher than Average boys (N=48)	Average boys (N=48) higher than Superior boys (N=47)	Superior girls (N=49) higher than Average girls (N=51)	Average girls (N=51) higher than Superior girls (N=49)
1. Self-concept	mental ability F,S	- - -	- - -	- - -
	social relations, opposite sex F	- - -	- - -	- - -
	overall mean F	- - -	- - -	- - -
	academic F,S	- - -	- - -	- - -
2. Social relations	liking by same sex F,S	- - -	- - -	- - -
	liking by opposite sex F,S	- - -	liking by opposite sex F,S	- - -
3. Classroom behavior	social work	- - -	- - -	- - -
	- - -	social friendly S	- - -	- - -
4. Achievement	composite F,S	- - -	composite F,S	- - -
	reading composite F,S	- - -	reading composite F,S	- - -
	work study (total) F,S	- - -	work study (total) F,S	- - -
	arithmetic computa. F,S	- - -	arithmetic computa. F,S	- - -
	arithmetic reasoning F,S	- - -	arithmetic reasoning F,S	- - -
	arithmetic concepts F,S	- - -	arithmetic concepts F,S	- - -
	arithmetic comprehension F,S	- - -	arithmetic comprehension F,S	- - -
5. Attitudes	- - -	- - -	- - -	- - -
6. Creativity	sentence gestalt	- - -	sentence gestalt	- - -
	match problems	- - -	match problems	- - -
	plot fluency	- - -	plot fluency	- - -
	plot originality	- - -	plot originality	- - -
	things fluency	- - -	things fluency	- - -
	things unusual	- - -	things unusual	- - -
	object synthesis	- - -	object synthesis	- - -
	apparatus fluency	- - -	apparatus fluency	- - -
7. Primary mental abilities	composite	- - -	composite	- - -
	verbal	- - -	verbal	- - -
	space	- - -	space	- - -
	reasoning	- - -	reasoning	- - -
	number	- - -	number	- - -
8. Thematic apperception test	- - -	- - -	need achievement W	- - -

Table B-2 (continued)

	BOYS		GIRLS	
	Superior boys higher than Average boys	Average boys higher than Superior boys	Superior girls higher than Average girls	Average girls higher than Superior girls
9. Teacher rating	attractive appearance F	---	---	---
	---	---	physical ability F,S	---
	work habits F,S	---	work habits F,S	---
	social virtues F,S	---	social virtues F	---
	---	---	happy qualities F	---
	creativity F,S	---	creativity F,S	---
	seek status, academic F,S	---	seek status, academic F,S	---
	---	---	seek status, social F	--- ---
	intrinsic interest F,S	---	intrinsic interest F,S	---
	mental ability W	---	mental ability W	---
10. Teacher social distance	liking for child S	---	liking for child S	---
11. Peer nomination	---	---	physical ability F,S	---
	mental ability F,S	---	mental ability F,S	---
	social relations same, judged by both sexes S	---	social relations same, judged by both sexes F,S	---
	social relations opposite judged by both sexes S	---	social relations opposite judged by both sexes F S	---
	attractive appearance F,S	---	attractive appearance F,S	---
	social relations with teacher F,S	---	social relations with teacher F,S	---
	work habits F,S	---	work habits F,S	---
	social virtues F,S	---	social virtues F,S	---
	---	---	happy qualities S	---
	school subjects F,S	---	school subjects F,S	---
	social relations with both judged by same sex F,S	---	social relations with both judged by same sex F,S	---
	social relations with both judged by opposite sex F,S	---	social relations with both judged by opposite sex F,S	---
	academic (mental ability plus school subjects)F,S	---	academic (mental ability plus school subjects)F,S	---

Table B-3 TARGET VARIABLE: ACHIEVEMENT TESTS - READING COMPOSITE

PREDICTOR VARIABLES (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall-Happy qualities					.20			
Overall mean		.24		.24	.27	.26		.21
Overall satisfact.				.25				
Overall improve			.28 a	-.16				
Spring-Happy qualities								
Overall mean								
Overall satisfact.								-.32*f
Overall improve								
2. Social relations								
Fall								
Liking for same sex	-.27 s		.39**		-.23 s		.37*a	-.07
Liking for opp. sex			.24		.25			
Spring								
Liking for same sex					-.25 f		-.02 f	.23
Liking for opp. sex							-.15 f	
3. Classroom behav'r								
Fall								
Task oriented work		.20						
Spring								
Task oriented work					.24			
4. Achievement tests								
Fall								
Total composite	.85**	.89**	.86**	.79**	.81**	.78**	.81**	.63**
Reading "					.80**	.79**	.75**	.67**
Work study "	.72**	.77**	.73**	.58**	.68**	.73**s	.71**a	.45**
Arithmetic "	.63**	.72**s	.56**	.39**	.69**	.65**	.69**a	.44**
Spring								
Total composite					.88**	.88**	.86**	.87**
Reading "								
Work study "					.65**	.82**	.65**	.78**
Arithmetic "					.75**	.63**	.65**	.64**
5. Attitudes								
Fall-Academic	-.04					-.29*		
Intensive study	-.11							
Overall mean	-.13					-.21		
Spring-Academic					.26 f			
Intensive study					.28 f		.27	
Overall mean					.27 f			
6. Creativity								
Winter								
Plot originality			.41**	.34*				.33*
Things fluency	.24	.21		.32*	.46**s	.20	-.09 a	.40**
Things unusual	.46**	.24	.31*	.25	.65**a, s	.32*	.07	.30*
Object synthesis	.33*		.22	.49**	.40**	.23		.33*
7. Primary mental abils.-Winter								
Total composite	.51**	.54**	.20	.56**	.54**	.58**	.26	.51**
Verbal	.65**	.69**	.46**	.61**	.67**	.73**	.60**	.59**
Space			-.25					
Reasoning	.32*	.36*		.44**	.41**	.42**		.45**
Number		.21			.20			
8. Motives from TAT								
Winter								
Need achievement					.21	.23		
Need affiliation	.21			.33*			.29*	.29*
Need power		.23		.22	.22			

Table B-4 TARGET VARIABLE: ACHIEVEMENT TESTS - WORK STUDY COMPOSITE

PREDICTOR VARIABLES (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall- Happy quals.	.19			.20				.20
Overall mean				.26			.23	.26
Overall satisfact				.27				
Overall improve								
Spring-Happy quals.					-.15 f			
Overall mean								
Overall satisfact								-.15 f
Overall improve								
2. Social relations								
Fall								
Liking for same sex	-.17 s		.41**		-.15 s		.44**a	-.06
Liking for opp. sex						-.21	.21	
Spring								
Liking for same sex					-.24	-.29*s		.22
Liking for opp. sex						-.20		
3. Classroom behav'r								
Fall								
Task oriented work				.28*				
Spring								
Task oriented work					.42**s	.21	-.05	
4. Achievement tests								
Fall								
Total composite	.92**	.94**	.85**	.81**	.81**s	.79**	.61**	.65**
Reading "	.72**	.77**	.73**	.58**	.61**	.77**	.56**	.55**
Work study "					.83**s	.78**s	.53**	.58**
Arithmetic "	.79**s	.82**s	.57**	.50**	.73**	.66**	.51**	.48**
Spring								
Total composite					.88**	.94**	.81**	.91**
Reading "					.65**a	.82**	.65**	.78**
Work study "								
Arithmetic "					.79**s	.78**	.59**	.72**
5. Attitudes								
Fall-Academic						-.27 s	.20	.22
Intensive study	-.09						.28*	.19
Overall mean							.20	
Spring-Academic								
Intensive study					.19 f		.26	
Overall mean								
6. Creativity								
Winter								
Plot originality			.29*					
Things fluency	.37*			.27	.30*			.41**
Things unusual	.40**				.36*	.31*		.34*
Object synthesis	.35*			.35*	.35*		.26	.38**
7. Primary mental abils. -Winter								
Total composite	.64**	.70**	.39**	.50**	.64**s	.63**	.27	.56**
Verbal	.63**	.67**s	.51**	.31*	.54**	.74**s	.53**	.37**
Space								
Reasoning	.45**	.48**	.26	.56**	.54**	.41**	.31*	.46**
Number	.25	.22			.33*			.25
8. Motives from TAT								
Winter								
Need achievement						.26		
Need affiliation			.20	.27			.34*	
Need power		.22						

Table B-5 TARGET VARIABLE: ACHIEVEMENT TESTS - ARITHMETIC COMPOSITE

PREDICTOR VARIABLES ↓ (Child variables)	Fall scores				Spring scores			
	Superior boys	Average boys	Superior girls	Average girls	Superior boys	Average boys	Superior girls	Average girls
1. Self-concepts								
Fall-Happy quals.								
Overall mean	.22	.27		.27				.21
Overall satisfact		-.20		.17				
Overall improve						-.22		
Spring-Happy quals.								
Overall mean								
Overall satisfact					.24			-.20 f
Overall improve						-.26		
2. Social relations								
Fall								
Liking for same sex			.24	-.01			.32*	
Liking for opp. sex					-.26			
Spring								
Liking for same sex						-.27		.27 f
Liking for opp. sex						-.24		
3. Classroom behav'r								
Fall								
Task oriented work								
Spring								
Task oriented work					.26 s		-.17	
4. Achievement tests								
Fall								
Total composite	.91**	.93**	.85**	.83**	.89**a	.79**	.79**	.73**
Reading "	.63**	.72**s	.56**	.39**	.70**	.62**	.55**	.48**
Work study "	.7[illegible]s	.82**s	.57**	.50**	.84**	.81**	.64**	.58**
Arithmetic "					.85**	.73**	.80**	.69**
Spring								
Total composite					.94**	.91**	.91**	.90**
Reading "					.75**	.63**	.65**	.64**
Work study "					.79**	.78**	.59**	.72**
Arithmetic "								
5. Attitudes								
Fall-Academic								
Intensive				.27				
Overall mean								
Spring-Academic					.22 a	-.18		
Intensive study								
Overall mean					.21			
6. Creativity								
Winter								
Plot originality								
Things fluency	.32*	.23		.28*	.46**s		-.20 a	.39**
Things unusual	.40**	.23			.47**s	.23	-.14	.20
Object synthesis	.32*				.35*			
7. Primary mental abils. - Winter								
Total composite	.76**s	.56**	.26	.33*	.75**s	.67**	.25	.46**
Verbal	.68**	.53**	.54**	.29*	.60**	.62**	.32*	.43**
Space	.20 s		-.31*					
Reasoning	.44**	.42**		.36*	.55**	.52**		.40**
Number	.44**	.26	.26	.20	.44**			.22
8. Motives from TAT								
Winter								
Need achievement	.26		.22					
Need affiliation		.23	.33*				.36*	
Need power		.26				.25		